The UNESCO COURIER

INTERVIEW WITH FAROUK HOSNY

APRIL 1991

PERCEPTIONS OF TIME

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encounters

We invite readers to send us photographs to be considered for publication in this feature. Your photo should show a painting, a sculpture, piece of architecture or any other subject which seems to be an example of cross-fertilization between cultures. Alternatively, you could send us pictures of two works from different cultural backgrounds in which you see some striking connection or resemblance. Please add a short caption to all photographs.

HERALD ANGEL
gilded oil painting on wood
by María Irma Zalazar

Executed with remarkable fidelity to the spirit and techniques of the masters of the 18th-century Cuzco school, this painting is one of a series in which the Argentine artist María Irma Zalazar has recreated a typical image of Andean baroque art, "the Angel with the Arquebus". Sometimes portrayed as a soldier, sometimes as a musician, always beautifully dressed in the Spanish style, the Angel is at once a warrior and a messenger of peace. This figure inspired by Christian imagery is one of the most original creations of Latin American mestizo art.

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Back cover: *Nebula* (1989), painting (160.5 x 140 cm) by the Korean artist Bang Hai-Ja.

The UNESCO COURIER

44th YEAR
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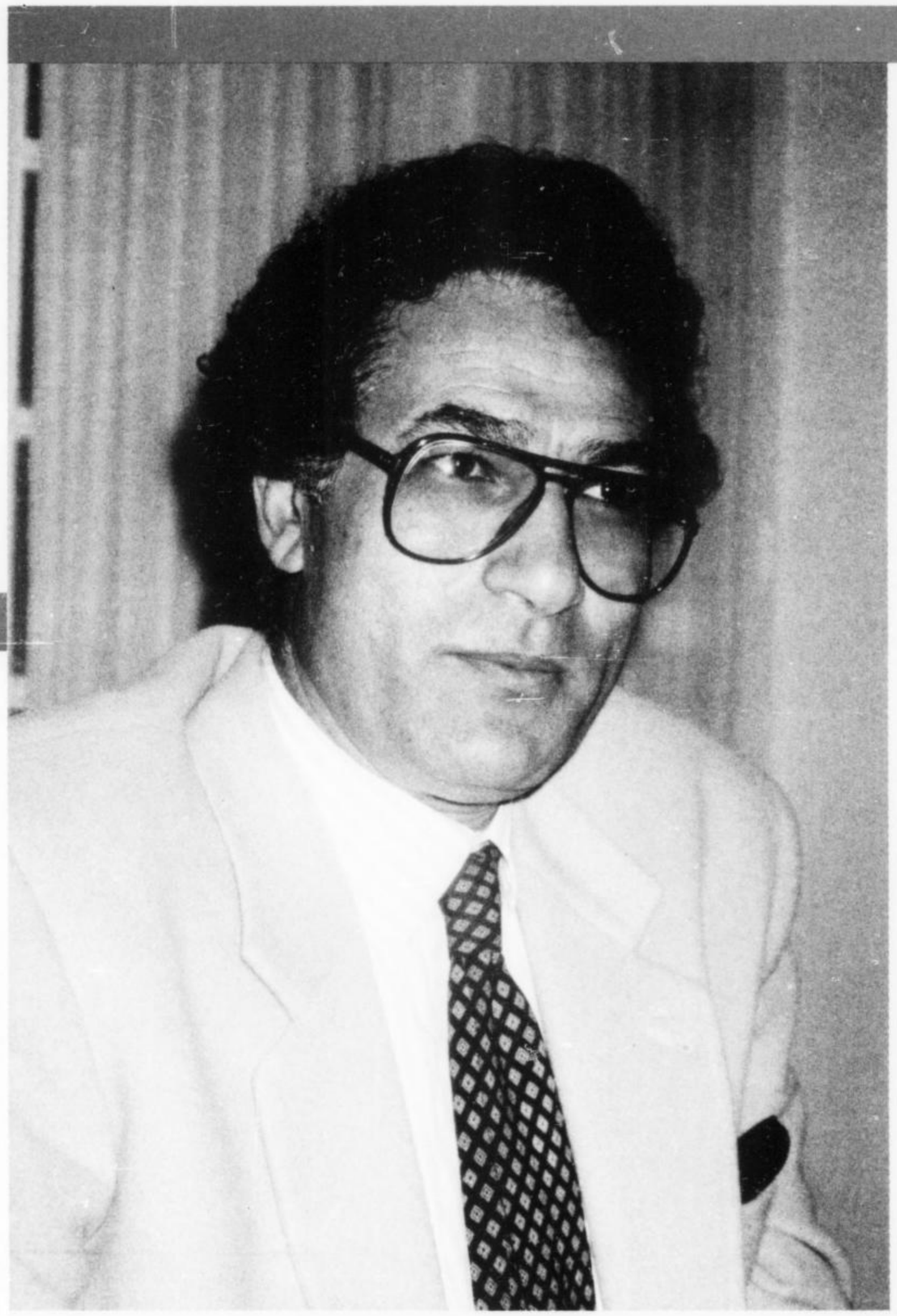
"The Governments of the States parties to this Constitution on behalf of their peoples declare,

"that since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed...

"that a peace based exclusively upon the political and economic arrangements of governments would not be a peace which could secure the unanimous, lasting and sincere support of the peoples of the world, and that the peace must therefore be founded, if it is not to fail, upon the intellectual and moral solidarity of mankind.

"For these reasons, the States parties ... are agreed and determined to develop and to increase the means of communication between their peoples and to employ these means for the purposes of mutual understanding and a truer and more perfect knowledge of each other's lives..."

Extract from the Preamble to the Constitution of UNESCO, London, 16 November 1945



INTERVIEW

FAROUK HOSNY

is one of Egypt's most outstanding contemporary painters. He has lived and worked for many years in Europe and is receptive to artistic trends in both the Arab world and the West. Today he is Egypt's Minister of Culture.

■ *You are a painter who has become a government minister. How compatible are these two occupations? Artists are supposed to live in the world of the imagination, while ministers are administrators who take action to try to achieve precise objectives on behalf of the state. Isn't it impossible to reconcile these demands?*

– There is a contradiction, certainly, but how serious it is depends on the people and circumstances involved. In my own case, I find it quite easy to resolve. I can't conceive of being a minister—especially a Minister of Culture—without imagination and without being able to mobilize imagination, my own and other people's, in the service of a bold cultural policy.

The raw material of my ministry is memory, talent and beauty. When we deal with the cultural heritage, we are managing the products of society's imagination throughout history. In the case of new creative work, we deal with the most innovative

Opposite page,
a painting by Farouk Hosny (1990).

elements of society, with visionaries and poets. With other ministries we share the responsibility of reflecting on major future projects which must respond to long-term social needs that are barely perceptible today.... At all these levels, the artist's intuition is just as necessary as the administrator's efficiency.

If we want to gear up for the future while keeping our feet on the ground, if we want to fulfil even a fraction of our dreams—then we always have to make a compromise between ambition and reason, between the risk that must be taken and the error that must not be committed....

Of course my functions as a minister are a brake on my personal work, my career as a painter. But that is a choice one makes, and I am not the only person who has made such a choice. I think that artists in many countries today feel a need to devote part of their time to other things than their creative work. They go into television or advertising, they become active in a political party, a human rights association or an environmental protection organization. Sometimes they even go into business—or join a government.

I think this trend is probably irreversible. Not only politics but industry, finance, and education, increasingly demand a wide range of talents, cultural inputs, ethical and aesthetic points of view that can only come from the world of letters and arts. Today perhaps Mozart and Modigliani would not have died in isolation and poverty.

■ ***Let's look at the matter from another angle. Some states refuse to create ministries of culture because they think such institutions act as a kind of bureaucratic straitjacket, a limitation on the freedom to create and perhaps even a way of dragooning artists. It's true that they cite the examples of ministries of culture that have been notorious for stifling true culture.***

— Culture can be stifled by a ministry, but it can also be stifled by a market governed by the laws of vulgarity, where competition encourages mediocrity and commissions only go to the most conventional artists.

This is what happens in many Third World countries where private patronage doesn't exist, where entrepreneurs who venture into the field of culture do so for strictly commercial motives and the vast majority of creators have no chance of making an impact because they lack the basic resources to do so.

What can a Ministry of Culture do in these circumstances? As you have just suggested, it can try to plan artistic production—that is to say, to define the areas to be encouraged and those to be discouraged, promote one direction rather than another, in short, treat artists as sub-contractors and works of art as products that can be produced to order like canned sardines or luxury textiles. This happens, and it has led to disasters. We must hope that it will soon be only an unhappy memory.

In this country, on the other hand—and

increasingly, as far as I can judge, elsewhere in the world—the Ministry of Culture seeks above all to be a place where creative work is stimulated and supported, and the freedom of the creator is protected. We generally intervene indirectly. We do not define objectives, we offer meeting-places—cultural centres—or provide creators with opportunities to make radio or television programmes, to produce plays, organize exhibitions of their paintings, or publish their poems. We insist on quality but we make no ideological demands.

Outside Cairo and a few other big cities, theatre or film production would be impossible without a subsidy from the ministry. Our role is to increase the opportunities available to artists all over Egypt and do all we can to present their work to the widest possible public.

There is another reason why a Ministry of Culture is absolutely essential in a country with a heritage as outstandingly rich as Egypt's.... What other institution could mobilize the resources, skills and efforts that are needed to preserve this heritage? The same problems arise in Greece, India, China and France.

If a country has a heritage which includes the pyramids and the Temple of Karnak, to whom can it entrust their protection and safeguard? Local enterprises don't have the resources, and a foreign multinational would soon incorporate them into a hotel complex. These are not reasonable options. These wonderful monuments and sites are the property of the Egyptian people, who assume the moral responsibility for their upkeep, not only for themselves, but on behalf of all humanity. Only the Egyptian state, which carries out research, excavates, makes inventories and protects all the treasures of the heritage from pilfering by local thieves as well as from big international predators, is in a position to meet the needs of site protection as well as those of tourism, which offers our heritage to the admiration of the world.

■ *What specific dangers threaten these sites?*
– Egypt's antiquities are in danger, but they are not alone in that. Antiquities are threatened everywhere today. Not because of neglect but because even the most advanced techniques that are used to protect them have some side-effects. We do not know for certain what precautions to take against these side-effects.

The problem exists on a much larger scale, the ecological scale. Modern technologies are beneficial to humanity in many fields but beyond a certain threshold they often have repercussions that are harmful to our health—and to the health of plants and the stone with which the masterpieces of Antiquity were built. When car exhaust gases, factory smoke and radiation are added to the results of climatic change, humidity, drought, and the wear and tear caused by the passage of time, then the chemistry of the stone, the freshness of the colours, the delicate harmony of forms and volumes are insidiously altered....

It is possible to combat some kinds of wear and tear, but not others. To take one example, the vibrations caused by traffic can to some extent be reduced by prohibiting the use of vehicles within a certain radius around important sites. But it's much more difficult to take precautions against the vibrations caused by aircraft. The threat of pollution from industrial activity can only be countered locally. What can be done about threats from an ecological disaster on the other side of the world? We had nothing to do with the Chernobyl disaster but we have not escaped some of its consequences. We face a Sisyphean task. But we must resist wherever we can. We must never give up.

Paradoxically, the very wealth of Egypt's historical, artistic and architectural heritage poses problems. Every square metre of Egyptian soil may conceal unsuspected treasures. To date we have brought to light 2,000 Pharaonic tombs of great value. Let's suppose that it would take two years' work to restore each of them. That means it would take no less than 4,000 working years to finish the job! As for restoring them all at once, that's far beyond the country's capacities.

We operate like firefighters whose priority is to extinguish fires as and when they occur. We concentrate on the antiquities in most immediate danger, those that must be preserved from irremediable deterioration. Unfortunately there's not much we can do as things stand at present. I would have liked to do more and better, to restore all the wonderful things that successive civilizations have created in Egypt over fifty centuries, and show them to the world in perfect condition.

■ *You say that restoration means using procedures that sometimes cause certain materials to deteriorate more quickly. Why is this?*
– There are different schools of thought about restoration and we should beware of making categorical judgements. A particular process may be efficient within certain limits for the restoration of one material but it may destroy another. It is often necessary to change from one process to another, to combine several and adapt some of them to unforeseen circumstances.... Apart from technical procedures,

the very philosophy of restoration is sometimes questioned. To restore an ancient city which has long been abandoned or has been destroyed by war, it may be legitimate to rebuild entire districts. To restore the Sphinx we should clearly try to restore its original appearance without changing anything.

Mistakes are sometimes made. They were made in previous attempts to restore the Sphinx. Products were used and elements added which would have modified its appearance. Fortunately, we were able to step in before it was too late. The new processes being used to protect the stone should not so much maintain the Sphinx in its current dilapidated state as restore it to its former splendour.

■ *Some ten years ago there was a highly controversial project to develop the famous plateau of the pyramids. You yourself have initiated a new rehabilitation project with UNESCO's help. How do things stand at present?*

– There is a fundamental difference between the two projects. The first would have devastated the site forever, since it involved the construction of hotels, villas, swimming pools and casinos. That would have been a violation of its historical dimension and sacred character. The new project, on the other hand, aims at clearing away all extraneous elements: resthouses, public toilets, warehouses, the homes of certain officials. There are plans to replace the existing tarmac access roads by stone-paved paths, remove the street lamps and stop encroachment by dromedaries, horses, sheep and goats.

■ *But it wasn't always like that....*

– No. These are quite recent developments. Only twenty years ago, the site was separate both from the town of Giza and the outer suburbs of Cairo. When visitors arrived they found themselves in a place of magical silence, they were right back at the dawn of time.... But surreptitiously some of the more chaotic features of our time have been allowed to invade this mythical space, to erode and gradually smother it.... At this rate, it will soon be impossible to distinguish the Sphinx from the newest buildings in the village of Nazlet el-Simman....

We can't destroy this village but we can, and should, mark the boundary of the site with a wall to isolate it from the buildings around it. This solution will not restore to the Sphinx the perspective—open to infinity—that it had for thousands of years. It will impose a fixed perimeter on the site but at least the site will be protected. And from certain angles, visitors will still be able to appreciate the majestic beauty of the place.

■ *A more general question about the durability of the construction materials of the pyramids and the Sphinx. Nothing lasts for ever. Can such ancient material be maintained indefinitely? Isn't there a risk that one day the problems will become insoluble?*

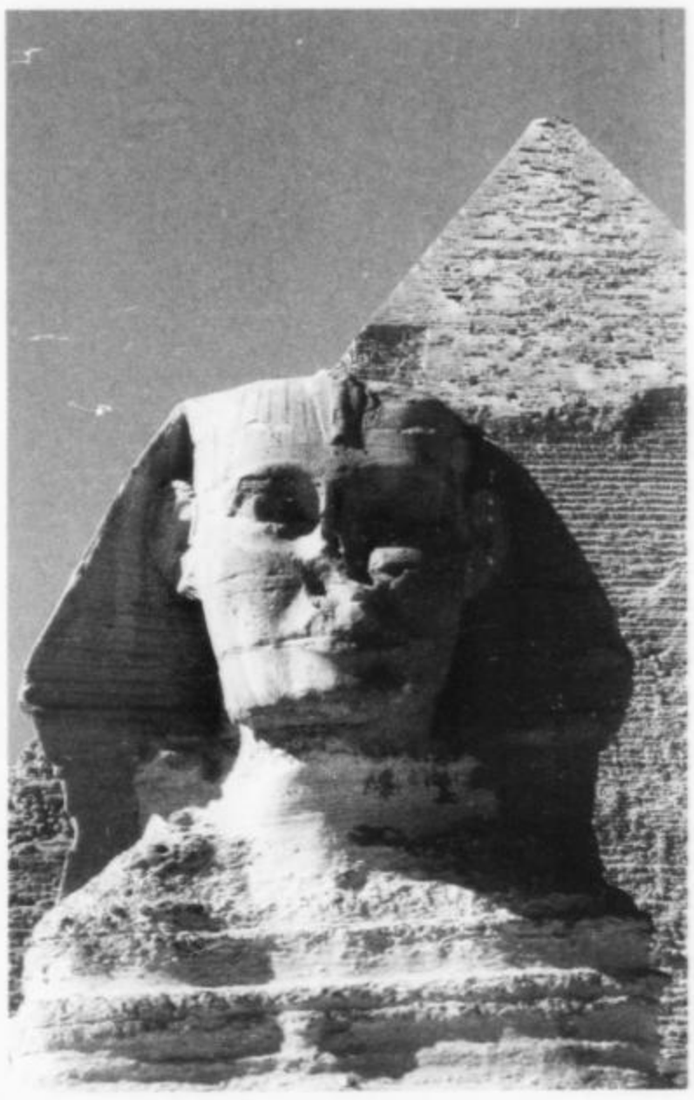
– I don't believe that there are any insoluble problems in this field. But there are problems which cost too much to solve. We are often faced with terrible dilemmas—we have masterpieces to restore and the technical solutions exist, but the price is far beyond what we can afford. A choice then has to be made between masterpieces—which ones should be sacrificed? This is always heartbreaking. Egypt's drama is that it has produced so many wonderful things, each of which would be the pride of any of the world's great museums—and most of them are crumbling away, disappearing before our eyes.

Of course, the pyramids and the Sphinx are among the treasures that will be saved whatever the cost. But what about the materials they are made of? The Sphinx is carved from a limestone rock that has already endured much.... I am not talking about the Sphinx itself, which is about 4,500 years old. I am talking about the rock, which is more than 50 million years old. For a long period the statue was completely buried in sand. Herodotus, for example, does not mention it. The sand concealed it from view but also protected it from the ravages of time. Since the sand has been cleared away, the Sphinx is once more exposed to the wind and sand-storms that will gradually erode it.

You know, the Sphinx was already in need of restoration 3,500 years ago at the time of Thutmose IV, again during the period of Roman rule 2,000 years ago, and again at the beginning of the present century. Its history is full of ups and downs, times when it was neglected and times when it was carefully looked after. Our own age is doubtless the most paradoxical of all. There is universal concern for the Sphinx yet modern conditions and tourism are exposing it to forms of aggression it has never had to endure in the past.

■ *Can we square this circle?*

– We shall never give up. We shall find the resources. We shall continue to improve our methods. And the world is not content simply to look on. It is backing us. And UNESCO, notably, is giving us very valuable support. ■



EDITORIAL

To dominate an anguish shared by all mankind, each culture has shaped its own conception of time. These conceptions have found expression in myths, epics and works of literature in which symbolic structures are used in an attempt to come to terms with the ephemeral and the eternal.

As the French philosopher Paul Ricœur suggests in the present issue, this symbolization constitutes "human time". It has produced a wide range of systems for organizing temporal experience. We have tried to give some idea of this diversity by citing examples from very different societies.

But as well as experiencing time, human beings in a sense affect time, if only through the invention of the quartz and atomic clocks which have revolutionized our capacities for measuring it. The same time-system now holds sway throughout the world. Perceptions of time rooted in the religious beliefs of many cultures are retreating in face of an invasion by electronic timekeeping. This crisis can be seen in the context of a more general crisis about the purpose of life and the values that govern it.

From the diversity of cultural expressions of time to the way in which they are being modified by sophisticated measuring devices, this issue is inspired by Henri Bergson's famous remark: "Time is invention or it is nothing." ■

On the banks of the Ganges at Rishikesh, Uttar Pradesh (India).

Coming to terms with time by Paul Ricœur

Mankind has invented powerful symbolic structures in order to cope with the immensity of cosmic time and the brevity of human life

Two extreme viewpoints on time suggest themselves to us, and we try to mediate between them.

On the one hand there is the harrowing experience of life's brevity, with death looming on the horizon. This fundamental experience is not endured in silence. The groans of the suffering are translated into language in the lyrical mode of lamentation, which mobilizes all the resources of poetry. Attached to lamentation is a corpus of popular wisdom which tells of the passage of time by means of metaphors that are rich in philosophy.

Thus we say that time flows or flies, suggesting that its somehow furtive passage prevents the present from staying with us forever. We also say that our recent experiences sink into the past and that once they are in this receptacle they can no longer be changed, even though the memory which we have of them and which preserves them is threatened with destruction by forgetfulness. Again, we say that the future, which we both desire and fear, is uncertain, although feared events arrive too quickly and longed-for events too slowly, and that in any case what happens will thwart calculation and foresight.

Antithetical to this elementary symbolization of the experience of time passing in an existence that is all too short, is the symbolization of the immensity of cosmic time which unflaggingly returns in the great cycles of years, seasons and days. We say that this time is all-enveloping. We represent it symbolically as a great immobile receptacle. Thus we say that our existence takes place "in" time, and suggest by this spatial metaphor the precedence of time over thought, which aspires to circumscribe its meaning and envelop it.

It is true that ways of measuring time, which will be discussed below, express a certain mastery of thought over something which eludes all attempts to grasp it. But these forms of measurement, which are themselves inordinately vast, strengthen the feeling of an enveloping immensity which contrasts with the experience of life's brevity.

Other symbolic structures seek to overcome the disparity between cosmic time and human time. But to appreciate their significance we must look more deeply into the nature of this disparity by identifying some of the speculative resources of the two metaphors of flight and envelopment.

The paradox of experience

With regard to cosmic time, major scientific discoveries have brought a keener appreciation of the ways in which increasingly long time spans fit together. In Western culture, for example, the world was long considered to be several thousand years old—6,000 was a figure sometimes mentioned.

The story of how these limits have been transgressed is fascinating in itself. Improved knowledge of geological eras has forced us to accept the idea that the Earth is much older than anyone could have guessed a few centuries ago. The discovery of fossils has shown that there was life on Earth far earlier than was once believed. Human origins are also being dated further and further back on a time scale reckoned in millions of years. The concentric durations in which we trace the origins of man, the origins of life, the origins of the Earth and the origins of the solar system are themselves enveloped by astronomical time calculated in light-years. Thus the immediate experience of an immense and all-enveloping time is reduced to a manageable level.

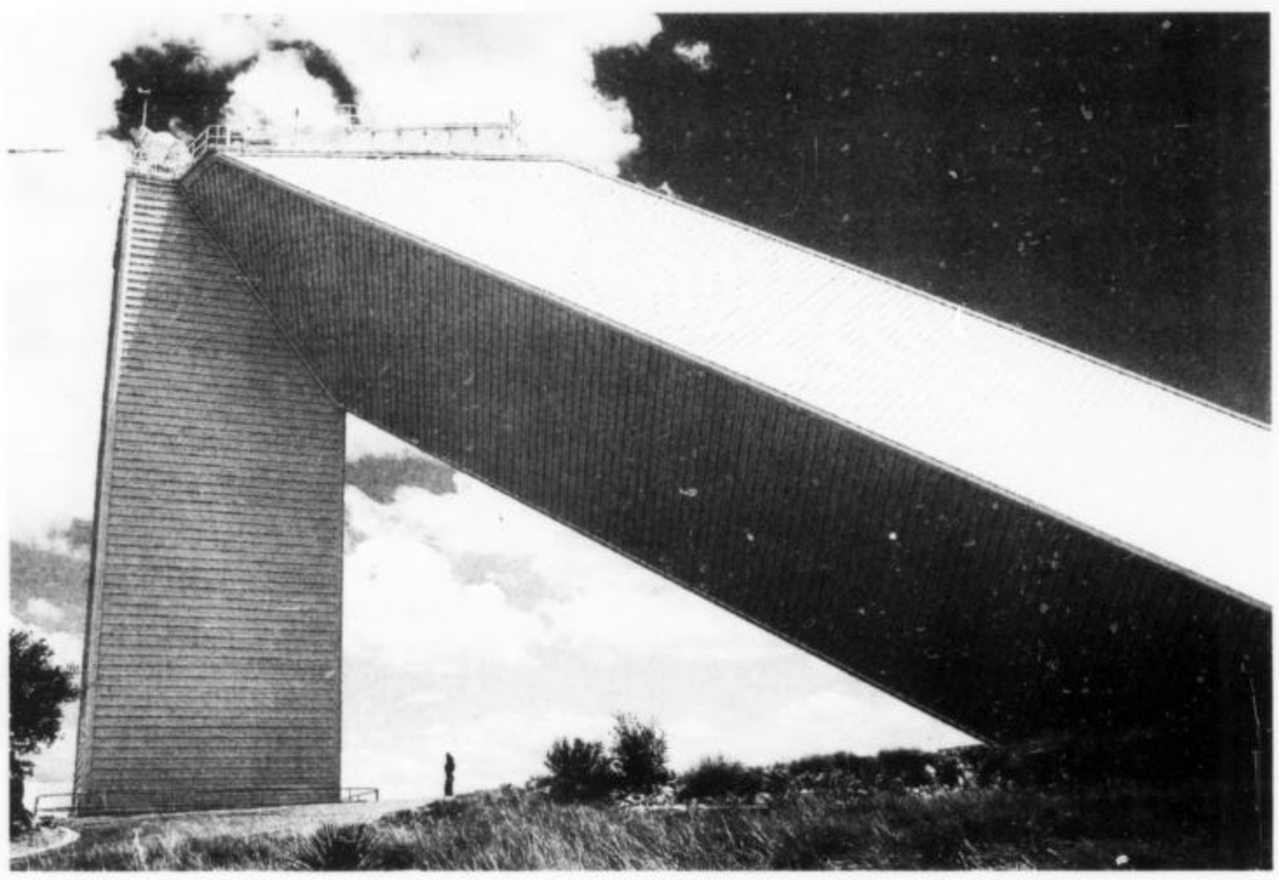
But the disparity between human time and cosmic time is not expressed in numerical terms alone. The main significance of the discordance between the two viewpoints is qualitative.

Let us return to the phenomenon of time passing in a fleeting instant. The notion of an instant has two distinct and irreconcilable meanings,

depending on which of the two viewpoints we adopt. From the viewpoint of cosmic time, which precedes human consciousness and to that extent is without witness, an instant is simply some kind of breach in the continuity of movement or, more generally, of changes in dynamic systems. To talk of a breach is to imply that any instant can be "now", like a point on the line of time.

However, for there to really be a "now" it must be experienced by a consciousness which perceives it as the passage of the future towards the past across its present. The real disparity between cosmic time and lived time is that between quantitative time and qualitative time, between a time without a present and a time with a present.

This incommensurability can be expressed in the form of a paradox. It is within the most insignificant of time spans, in quantitative terms—that of a consciousness stretched between birth and death—that the very question of the meaning of time arises, at the heart of the living present, with its retentions and protensions. By using the imagination it is possible to extend the range of memory until it equals the immensity of sidereal time, and that of foresight until it reaches a possible end of the world. However, in addition to the fact that the imagination is overwhelmed by



McMath solar telescope at the Kitt Peak National Observatory, Arizona (USA).

an excess of grandeur, as in the experience of the sublime in Kant, there will always be something missing between the immeasurable past and the future and that is the pivotal experience of lived time, which does not belong to the representation of quantitative time.

Taking this phenomenon of disparity as a starting point, it is possible to appreciate the power of symbolic structures which, by mediating between cosmic time and lived time, constitute what can properly be called the *cultural* experience of time.

To get some idea of the immensity of this enterprise of mediation we must go back to myths and to mythical time. Cultural anthropologists refer to what the French comparative philologist and mythologist Georges Dumézil called "great time", the function of which is to synchronize cosmic time with the time of societies and of people living in societies. Dumézil did this by making a single, global *scansion* of time, so that cycles of different duration, the great celestial cycles, biological recurrences and the rhythms of social life can be related to each other. By the regularity of its celebration, ritual expresses a time whose rhythms are vaster than those of ordinary action, and gives to the representations of myth the complement of a practical scansion.

I will say no more about the problem of mythical time, which I discussed in an earlier study published by UNESCO.* I will deal directly with those symbolic structures which can be situated at the point of inflection between *mythos* and *logos*. It is at this median level that it is possible to place the temporal structures which one philosopher, Krzysztof Pomian, has called "chronosophies" to distinguish them from the chronographies with which they are intermingled.

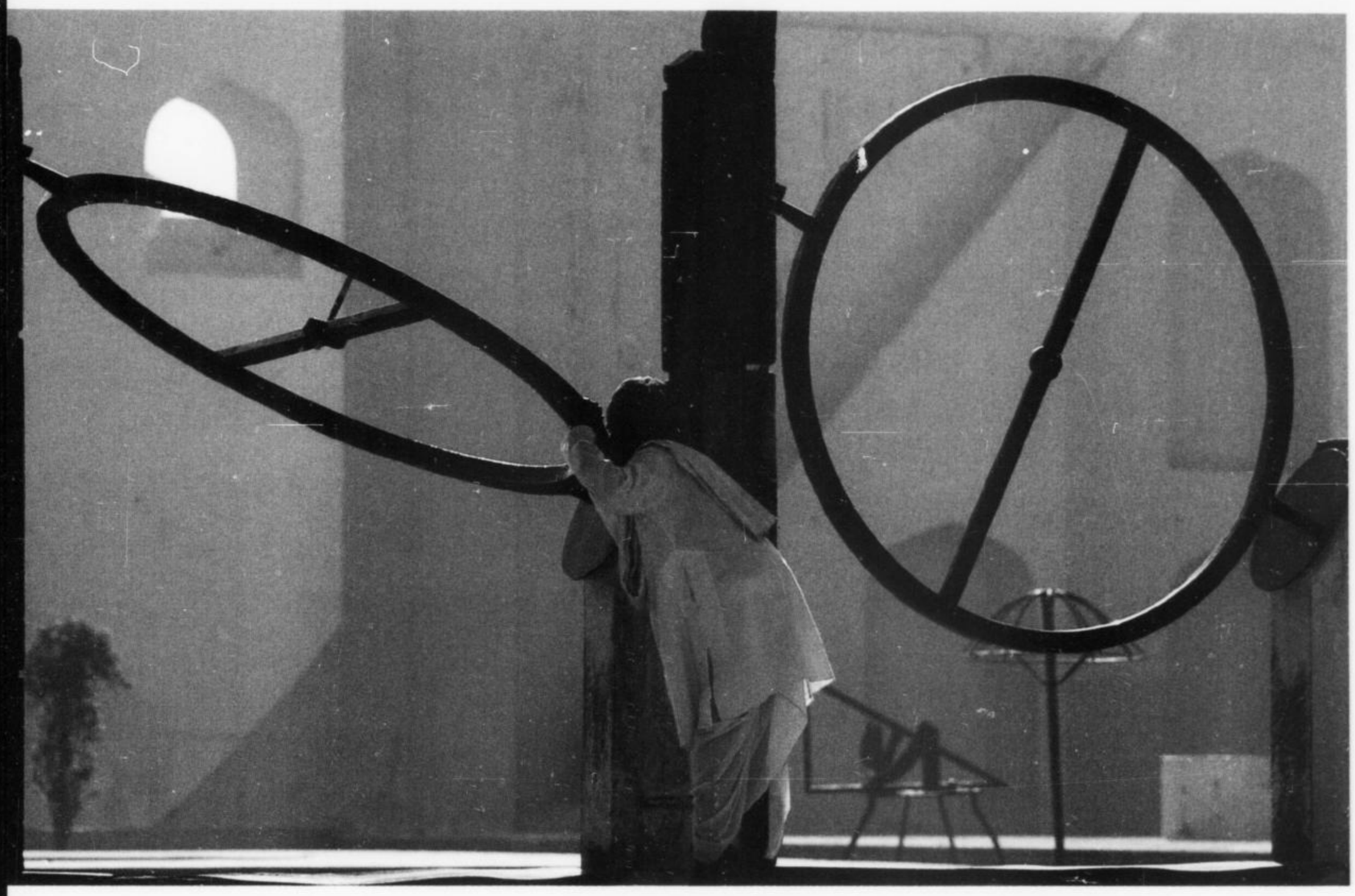
Chronosophies and calendars

At this level history is divided into major periods, eras or epochs. This is a scansion of time which takes its cue from events which can be described as "epoch-making" in the sense that they are linked to the origin of something. In a perspective which is still mythical, the most archaic divisions into periods of time attach these epoch-making events of history to the acts which themselves created the cosmos. Political chronology then takes over from religious chronology, while retaining the imprint of cosmic time.

We need only think of the distinction between the Golden Age, the Bronze Age and the Iron Age, or the division into four monarchies that the prophet Daniel deciphered from the parts of the image whose head was made of gold, the arms of silver, the thighs of brass, and the feet of iron and clay. Later, St. Augustine divided the history of humanity into six episodes, each of which was supposed to correspond to a day of the Creation and an age of life, before the eternal Sunday of eschatological time. These two forms of dividing time into periods deal with linear time, whereas that of Ibn Khaldun applies to a form of cyclical time in which there is a superposition of astral conjunction, the duration of dynasties and the ages of human life.

These half-theological, half-political ways of dividing time moved into the background of European thinking in the late Middle Ages, but the need for divisions of some kind can still be seen in school textbooks today. After all, the notion of the Renaissance evokes a form of

* *Cultures and Time*, 1976.



Instruments at the 18th-century astronomical observatory at Jaipur, Rajasthan (India).

division in which any innovation is justified by the revival of Greco-Roman Antiquity. As for the idea of progress, which seems to exist in a single linear time, it evokes new divisions. In addition to the great divide between ancient and modern times, it projects a universal history which, from Voltaire to Hegel, divides time into reigns or kingdoms (in Hegel, the Oriental, Greek, Roman, and Germanic).

The major function of these chronosophies is to establish, over and above ephemeral individual lives, and even the lives of peoples and their changing dynasties, a time which is more than human and which, in one way or another, constitutes a transition between the time of the cosmos and that of ordinary mortals.

Chronographies have survived the chronosophies with which they are mingled since they constitute a more fundamental attempt at mediation—namely an inscription of human time in sidereal time. This inscription consists of the invention of a third time, calendar time. There are many different calendars, but they do possess certain common features which enable us to talk in terms of calendar time. Together, these features make possible the computation of time: a founding event, which is considered to open a new era (the birth of Buddha or Christ, the Hegira, the accession of a sovereign), is the starting point from which all later events can be dated.

In this way chronological time is connected to chronosophical time, from which it nevertheless differs since it provides an axis of reference in relation to which it is possible to pass through time in the two directions, from the past to the present and from the present to the past: our own lives are part of these events to which we look back or forward. We decide on a set of units of measurement—days, months, years—to designate the constant intervals between the recurrence of cosmic phenomena.

Calendar time is a symbolic mediation structure in the sense that it is inscribed both in cosmic time (on the basis of astronomical knowledge), and in human experience (on the basis of founding events which belong to the collective memory and are commemorated in celebrations).

The past—the absentee from history

With calendar time we have entered historical time, with its dual value as the time of events which really happened and the time of the discourse which reports them. At first it seems that this duality is the result of an unfortunate confusion, since in many languages the same word *history* designates the *res gestae* (things done) and the reconstructions which historians make of them. The justification which can be offered for this apparent ambiguity leads to the heart of the cultural experience of time.

PAUL RICŒUR,
French philosopher and former professor of philosophy at the University of Paris X (Nanterre) and at the University of Chicago, is director of the French philosophical journal *Revue de métaphysique et de morale*. Among his many published works translated into English are *Fallible Man: Philosophy of the Will* (Fordham University Press, New York, 1986), *The Rule of Metaphor* (University of Toronto Press, 1977/Routledge & Kegan Paul, London, 1986), and *Time and Narrative* (3 vols., University of Chicago Press, 1984, 1986, 1988). He has edited 2 collections of studies for UNESCO, *Cultures and Time* (1976) and *Time and the Philosophies* (1977).

On the one hand, the past is that of the actions (and sufferings) of people like ourselves, and this activity demands to be saved from oblivion, demands to be recounted. But all that remains of these past actions are the traces which the historian treats as documents by assembling, selecting and criticizing them. As for the past, it is the absentee from history.

On the other hand, if we ask ourselves about the relationship between written history and a given segment of the past, we must start with the fact that historians' history is not a carbon copy of the past. It is of course impossible to compare the supposed copy with the lost original, and yet constructions of chains of events linked together by causes or reasons do set out to be reconstructions of what took place.

This link between scholarly construction and reconstruction characterizes history as a major symbolic structure of the cultural experience of time. To represent the past is to construct an icon of it, not a copy but a kind of model in which what is written is tantamount to..., stands for..., that absentee from history which is the past. This representational, proxy relationship is inherent in the intentionality of historical knowledge. It justifies the dual meaning of the word history mentioned above.

A similar duality exists with the word *time* as used in the expression "historical time". On the one hand there is time as experienced collectively by people in the past; on the other there is time in the written account which is made of it.

In the first sense of the term, historical time is vaster than that of mortal beings although it is not on a par with cosmic time. It is the time of peoples, nations and, in general, of social entities which are more durable than individual lives. People are only of historical interest to the extent that they are considered with reference to nature and to changes in a specific society at a specific time and place. To emphasize the reality of this vanished past, it must be noted that the events connected to the event constituted by the actual writing of the historical account are dated in the same calendar time.

This historical time is the correlative of the time involved in the narration of events. Recounting takes time and above all organizes time. Composing a written account is a configuring act which, from a simple succession, extracts temporal forms organized in closed totalities. This configured time is structured by machinations which combine intentions, causes and the workings of chance. Corresponding to it is the time of the persons who feature in the written account, which, one might say, simultaneously becomes a machination in its own right. Thus the actors of history are given a unique identity: the narrative identity.

It then becomes possible to connect the two aspects of historical time. The written account can confer a posteriori on the historical entities which are peoples and nations, and on communities of all kinds, a narrative identity which is comparable to that of the characters in a story. These communities become the collective heroes (and also the victims) of machinations which take place on the historical time scale. Between the time when the events actually happened and the time of historical account there is the same symbolizing relationship which makes the latter the representative of the abolished past, the absentee from history. History as it is told takes the place of history as it is collectively experienced.

The force of the present

Let us now return from historical time to individual time, which we left on a note of lamentation and lyricism.

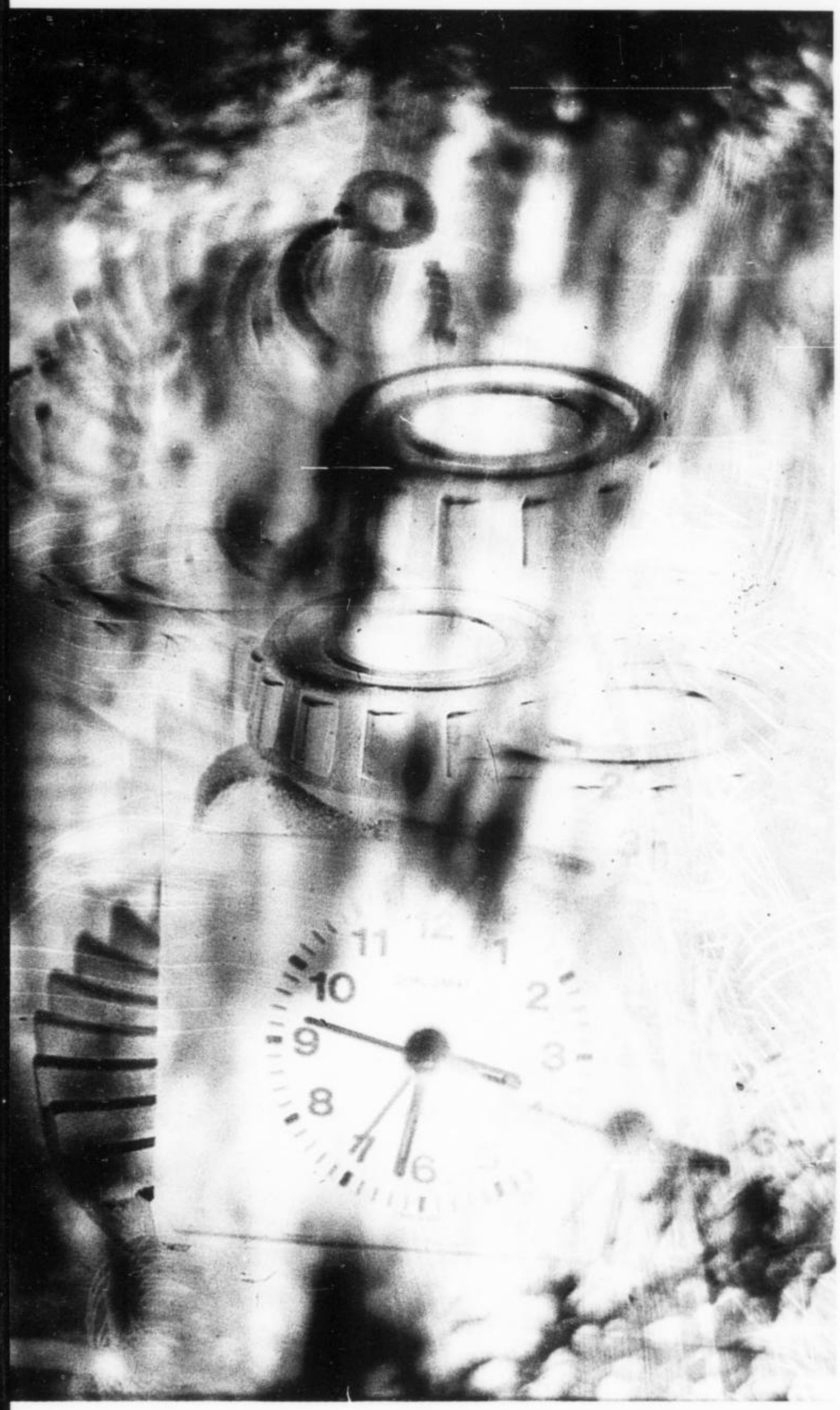
The following observation provides us with a transition: historical communities, although they cannot be decomposed into a dust of individual actions and reactions, cannot be defined without reference to the individuals which are their *partners*, i.e. those who take part in them as if they are characters in a story which concerns them personally. The link between collective time and individual time is a corollary of this link between society and the individual. Just as the notion of narrative identity can be applied analogically to individuals and to historical communities, so the structure of the present, pregnant

Levels of time

On the first level is physical time, a very precise representation of which is provided by the modern science of nature. This is a very elementary time, which in a sense underlies all the others. Next comes the time of life, considered essentially in its evolutionary aspect; we may therefore speak at this level of an evolutionary time. At the highest point of evolution, we see the appearance of highly complex nervous systems, and correlatively a form of time which may be called neuronic (or neurological) time, the properties of which are described by neurophysiology.

With the appearance of the human phenomenon, we see the emergence of psychological time, which is associated with individual behaviour, then historical time, which is associated with the life of societies, civilizations and cultures. But man feels the bite of time and aspires to escape from it. For him this is a fundamental problem which plays a crucial role in the origin of the idea of salvation and is thus closely linked to the religious dimension of existence. The category of salvation is a fundamental anthropological category. Time considered from the perspective of this category has a specific form which may be described as soteriological time.

Jean Ladrière
Belgian philosopher
("Approche philosophique du temps: le temps cosmique et le temps vécu", from *Temps et devenir* © Presses Universitaires de Louvain-la-Neuve, 1984.)



Photomontage by Hervé Bernard.

with the recent past and the imminent future (in memory and nostalgia on the one hand, in plans and hopes on the other), applies analogically to collective time and to individual time.

Historical time can be seen as a relationship between what the German philosopher Reinhardt Koselleck calls the horizon of expectation and the space of experience. By space of experience he means the totality of all the heritages transmitted by tradition to the historical present; by horizon of expectation, the deployment of projects and hopes which insert the future into the present. The space of experience can be narrow and poor if the heritages are sclerotic, dead, immobile. The horizon of expectation can be brought nearer in the short term of the everyday organization of time, or pushed back almost infinitely in utopias of regeneration, reconciliation and reintegration.

Koselleck points out that we cannot derive the horizon of expectation from the space of experience. Only in the present does the concentration of the past in the space of experience intersect with the deployment of the future in the horizon of expectation. But the exchange is only fruitful if the present is itself a force of *initiative* (Nietzsche spoke in this sense of the "force of the present").

This triple structure—the horizon of expectation, the space of experience, and initiative—is exactly symmetrical to the constitution of individual time in the living present. St. Augustine wrote in his *Confessions* of time as engendered by the threefold present. "The present of things past," he says, "is memory. The present of things present, sight; the present of things future, expectation." The "still" of the recent past and the "already" of the imminent future are each rooted in the force of the present which, in terms of representation, is called vigilance, in terms of action, the capacity to begin something in the course of things.

This analogy between the structure of historical time and that of individual time can be understood in two ways. The first may be thought of as the *interiorization* of the way in which a community is located in historical time; the second as the *extrapolation* of the triple present of the individual soul. This double reading is justified by the resemblance between individual narrative identity and the collective narrative identity which in its turn reflects the parallelism between plot and character in written history and biography.

We have now come full circle. We began with the lamentation of the poet deploring the flight of time, the erosion of memory, and disappointed expectations, and contrasted this elegy of the unhappy awareness of individual time with contemplation of the sidereal order and its immense time. We have not covered all the ground. We have simply discussed a series of mediations which propose a *pacified crossing of the interval:* the great time of myths, eras and chronosophies, calendar time, historical time which is vaster than the individual, and individual time which can be seen as the final point of an interiorization of all these times which, degree by degree, symbolize the immense time of the universe.

Lamentation has not been refuted. It has simply been compensated for by experience of the initiative and the vigilance which give the present its force. And it is in the element of language, carried by its symbolic structures, that we have followed the gradual constitution of the cultural experience of time. ■

Measured moments by Jean Matricon

From the sundial to the atomic clock, the search for split-second accuracy

TIME is both the most familiar and the most elusive of concepts, yet it is one which human beings know that they will never fully grasp. The most they can hope for is to make the best use of the time allotted to each one of them.

How can time be measured? Length, volume, mass, energy—almost all the physical values of the world around us submit to our manipulations. Time is an exception. It is impossible to cut out a segment of time and compare it with another segment taken from somewhere else. To measure time, we must select some other phenomenon which we can manipulate and which recurs in identical fashion. We do not measure time itself, but its manifestation through a physical phenomenon of our choice.

As well as the inherent difficulty of measuring time, there is another problem which stems from the ambiguity of what is being measured. Most of the instruments devised for this purpose measure *intervals of time*, or *duration*, notions which give a sense of the irreversibility of the march of time but do not enable us accurately to situate the *chronology* of events. Measuring time also implies situating events in relation to each other, in other words, dating them.

By providing a time scale with a periodic return of identical situations, which can be calculated, the time divisions offered by the cycles of the stars, the rhythm of the seasons, the phases of the Moon, and the alternance of day and night, enable us to establish such chronologies.

Chronologies and calendars

Very early on, observation of the sky, by day and by night, revealed the complexity of the movement of the stars. A complete rotation of the Earth in relation to the pole star (a sidereal day) takes four minutes short of twenty-four hours. The Sun's leisurely visitation of the thirteen constellations of the zodiac is completed in 365 and a quarter days. This movement puts the Sun a little more out of phase with the stars each day and produces a solar day of twenty-four hours. As for the Moon, its revolution around the Earth —the period from one new Moon to the next— takes about twenty-nine and a half days.

All these data seem to have been accurately measured by Babylonian astronomers as early as 1800 BC. They were used to establish a calendar based on a lunar month consisting sometimes of twenty-nine and sometimes of thirty days. Prediction of these intervals required a remarkable knowledge of the apparent movements of the Sun and the Moon. The Egyptians, whose life was linked to the flooding of the Nile, opted for an annual calendar with a year of exactly 365 days. This put the calendar year out of phase with the solar year, and therefore with the agricultural (seasonal) year, by one day every four years. Thus the civil (calendar) year only coincided with the solar year once every 1,460 years!

Almost all civilizations have based their calendars on either the lunar month or the solar year, despite the inherent difficulty that the year is not made up of an exact number of lunar months. Each civilization thus invented its own more or less fixed, more or less arbitrary, system of adjustment. This put great power into the hands of the religious or political hierarchy which took this decision. Although today these adjustments are no longer arbitrary, the variety of calendars and of cultures that they reflect remains.

The role of the calendar has not changed since the time of its ancient origins. It is the guarantor of the cyclical recurrence of natural phenomena, such as the tides and the seasons, and of human events, such as religious and civil festivals. It also makes possible the establishment of a chronology attributing to each event a date and a precise position in the unfolding of time. The calendar is undoubtedly one of the most stable and most specific elements of any society.

The demands of daily religious and domestic life created a need for some kind of time scale or chronology of night and day. The Egyptians were skilled astronomers, and drew up a list of the stars that rose every day just before the Sun, thus signalling the final hour of night. Having decided, for the sake of simplicity, to allot the

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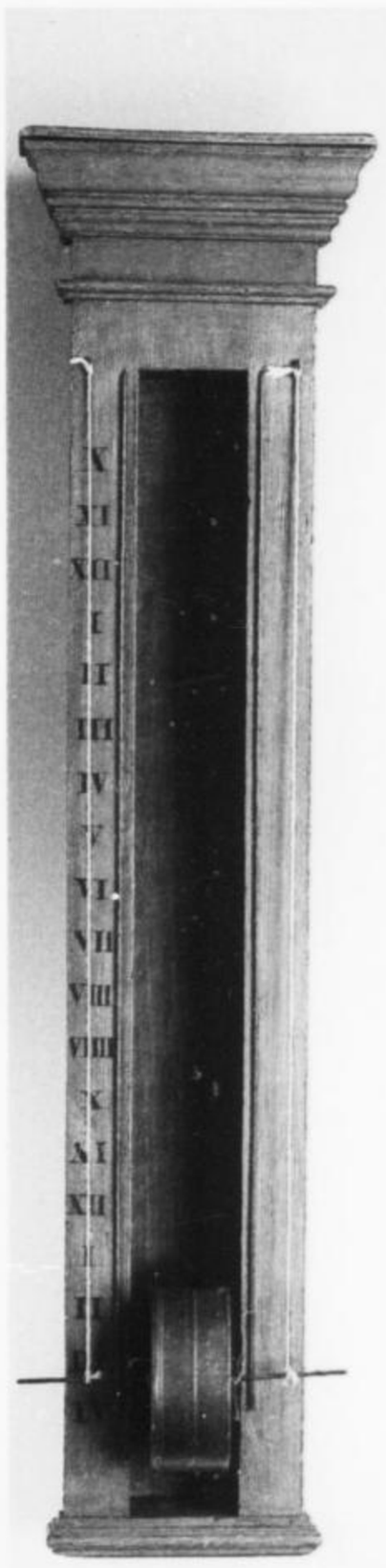
French scientist, is professor of physics at the University of Paris VII (Jussieu). As scientific adviser for an exhibition entitled *L'invention du temps* ("The Invention of Time") held at the Cité des sciences et de l'industrie, La Villette, Paris, in 1989, he wrote a catalogue (with Julien Roumette), which will be reissued in October 1991 as *Le temps et les hommes* ("Time and Man") by Collection Explora, Editions Presses-Pocket, Paris.

The *Intihuatana* at the ancient Inca fortress city of Machu Picchu (Peru). A monumental carved rock surrounded by walls, doors and passageways, it is thought to have been a solar calendar.

An early 19th-century French water clock or clepsydra. The water is contained in a drum divided by partitions pierced by small holes. It slowly flows through the holes, causing the drum to turn and descend between the graduated uprights as the 2 cords attached to its axis unroll.



role of herald of the dawn to the same star for a period of ten days before passing it on to another, they drew up tables showing, for each night of the year, the order in which they rose, from twilight to dawn. Thus, for the 365 days of the year, there were thirty-six ten-day periods. During the short summer nights twelve risings of these herald stars could be observed and it was therefore decided to divide the night into twelve "hours".

During the day, the height of the Sun and the shadow cast by a column, or *gnomon*, on a graduated scale was also used by the Egyptians to measure the passing of time. From the middle of the second millennium BC, we find these "solar rulers" indicating a division of the day into twelve hours. Thus the Egyptians can be said to have invented the twenty-four-hour day. These hours, however, were not all of the same length since days and nights vary in duration throughout the year.

The most ancient sundials were Egyptian, but it is certain that similar devices existed very early on in other civilizations, notably in China, Babylon and pre-Columbian America. Ranging from a simple stick thrust vertically into the soil to the refined instruments by means of which, as late as the end of the last century, mechanical watches could be set by the Sun, the sundial, in all civilizations and at all latitudes, has proved to be the most reliable, the most widely accessible and the most accurate timekeeper...provided, of course, that the Sun shone.

The first mechanical devices

Very early in history, instruments that measured *duration,* or periods of time the start of which could be selected at will by the user, were to be found alongside chronological timekeepers.

The oldest known water clock dates from 1400 BC. It consisted of a cone-shaped vase with a hole in the bottom and with a series of graduated lines drawn horizontally on the inside. The vase was filled with water and as it slowly emptied the level of the remaining water indicated the time that had elapsed since the filling of the vase. An immense variety of these water clocks, or clepsydras, were made in different civilizations.

From Greco-Roman times, the technique was known of using the dynamic power of water to drive a system of gears which in turn could operate visual time indicators and set off sound signals. This tradition was perpetuated and the mechanisms perfected by the Arabs. In the year 602 of the Hegira, al-Jazari described the construction of impressive instruments that acted both as clocks and as astronomical calendars.

A huge water-powered astronomical clock, housed in a twelve-metre-high tower, was built and perfected in China in 1094 by Su Song. Only a written description of this clock has survived.

Telling the time

Since machines for telling the time were made, there must have been a need for them. In the Middle Ages, the great majority of the world's population were peasant farmers, and the time indicated by the Sun in the heavens was adequate for agricultural purposes. Accurate knowledge of the time of day was, however, a necessity of religious life, and for both Muslims and Christians the hour of prayer had to be scrupulously and accurately observed. Others who needed to know the time of day included astronomers and astrologers who, though few in number, were in all countries close to the centre of power. In the Islamic world and other places where the climate made the use of sundials or water clocks feasible, these needs were met. This was not always the case in regions such as northern Europe where the Sun is often hidden by clouds, the days are short in winter, and water is liable to freeze.

During the eleventh and twelfth centuries, a new form of urban life developed in Europe. Banks and industry came into being and crafts flourished. These activities brought with them the need for more precise and permanently available means of telling the time. The old instruments were unsatisfactory, and by the end of the thirteenth century the time was ripe for the invention of the mechanical clock operated by weights and pendulums. The appearance of these devices marks one of the great turning points in the history of science and technology.

The earliest clocks were neither accurate nor reliable, but the method of measuring time that they introduced, which was independent of the stars or the elements and a pure product of human ingenuity, was to revolutionize our ways of life. Advancing to the rhythm of the pendulum, the new instruments would lead the way to the technological and industrial civilization we know today.

From the thirteenth to the twentieth century, in response to increasingly stringent demands, mechanical clocks were constantly improved and became more accurate, more reliable, smaller and

Einstein's theory of relativity

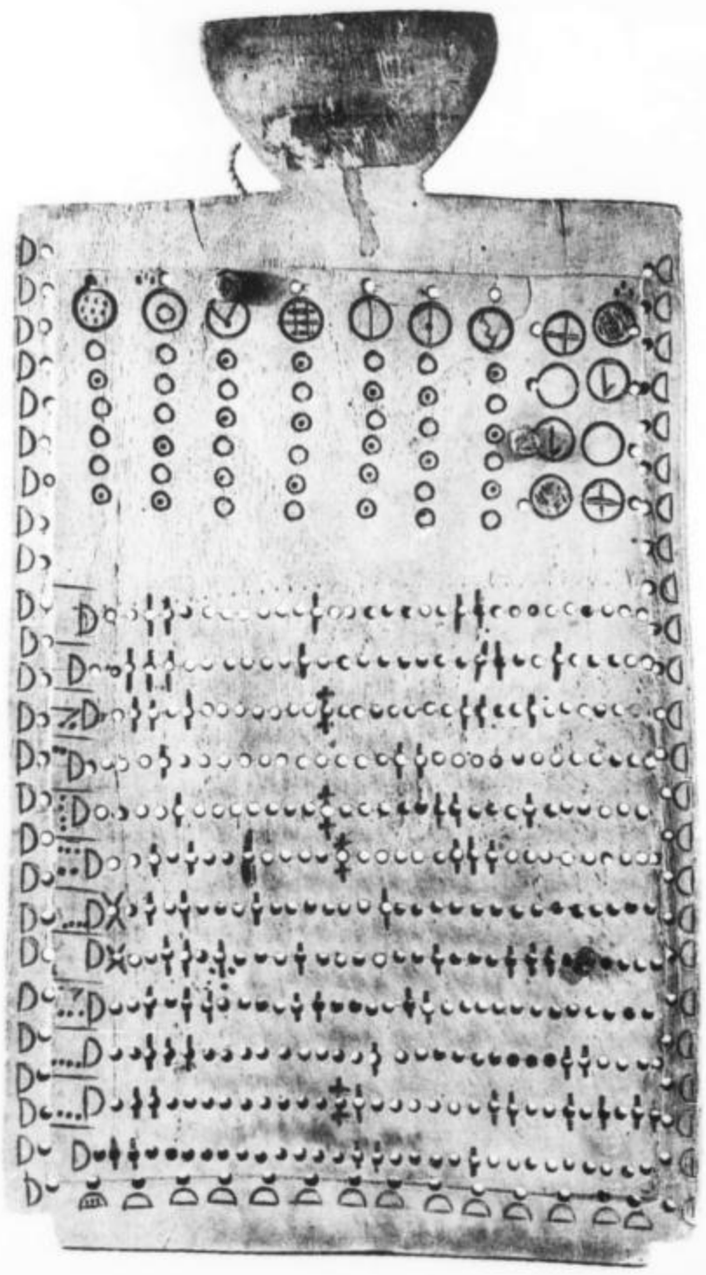
The most salient feature of the doctrine of relativity is the negation of the idea of time, such as it has been conceived since there were men and they thought, to paraphrase La Bruyère.

Peter and Paul are in a bedroom. Paul goes for a walk. On his return, Peter says to him: "You have been away for an hour."

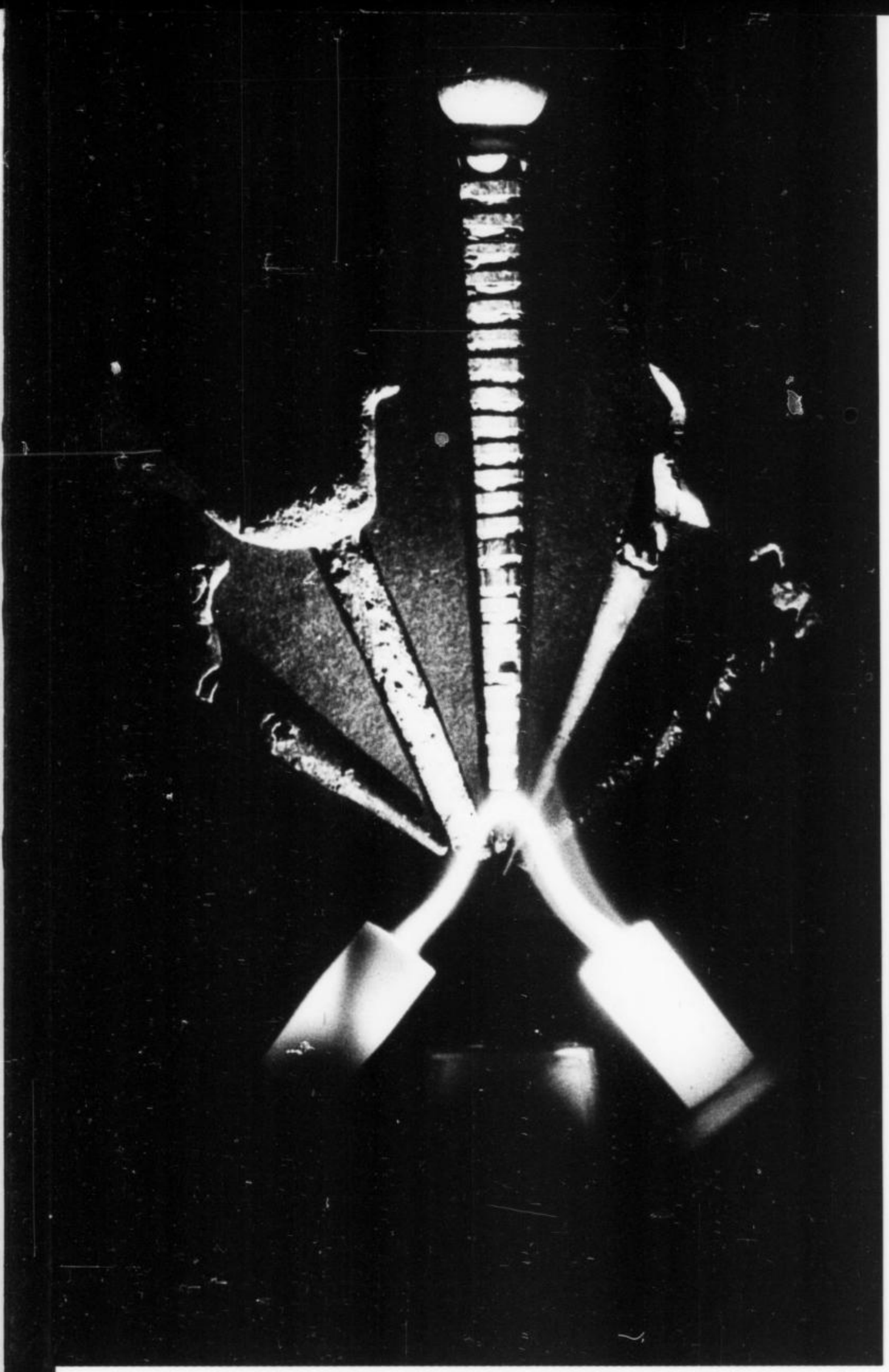
"How do you know?" Paul replies. "All you can say is that you have spent an hour in this bedroom, because you have not moved. But time slows down for a being in movement. My absence lasted less than an hour if I was on foot; even less if I was in a car; still less if I took an aeroplane. If I had travelled at the speed of light, I would have returned at the very instant when I left. If I could move faster than light, I would have returned before I left."

Daniel Berthelot
French chemist
(*La physique et la métaphysique des théories d'Einstein*,
© Payot, Paris 1922)

Muslim calendar in wood (41 x 28 cm) from Benin. The circles on the upper part represent the days of the week and important times of the day; those on the lower part represent the days of the lunar year.



A modern Nepalese calendar.



less costly. The first clocks took as long as a year to make, could easily gain or lose an hour a day, and lasted only about ten years, whereas the best mechanical marine chronometers made in the nineteenth century were accurate to within a tenth of a second a day and are still working as well as ever.

Bronze pins from the Mesopotamian site of Susa (3rd-4th century BC) being analysed by ultraviolet spectrometry. The pins can be dated by measuring the radiation given off after they are heated by the electrical arc, and comparing it with that of control objects.

Universal time

Until the last century few people travelled and those who did travelled slowly. Each town and village lived by its own time as registered by its own sundial, which was more accurate than any mechanical clock. All this changed with the coming of the railway and the telegraph, which gradually drew all the cities of the world into a single network and obliged them to agree upon a coherent time system.

An international system of time zones, under which the hour in each zone differs whilst minutes and seconds are synchronized with Universal Time (mean solar time at the Greenwich meridian), was proposed in 1885 and in less than thirty years had been adopted worldwide. Synchronization was initially regulated by telegraph, but today satellites, accurate to a millionth of a second, have taken over the task.

Quartz and caesium clocks

Since the seventeenth century all mechanical clocks have been regulated by the oscillation of a pendulum or of a balance-wheel connected to a spiral hair-spring. Until the twentieth century no more accurate form of oscillator was known. In 1928, however, following the discovery that the mechanical vibration of a quartz crystal is accompanied by electrical oscillation, the possibility was envisaged of replacing the old balance-wheels by suitably cut crystals.

The first quartz-crystal clock was cumbersome and only moderately accurate. Sixty years later, thanks to advances in electronics, cheap quartz watches can be more accurate than the finest mechanical observatory clocks. Amazingly accurate timekeeping suddenly became widely possible. Wherever we may be, the time is posted up for us to see, with minutes and seconds the same throughout the world.

When the atom, a new and even more accurate oscillator, became available to the world's physics laboratories, even the rotation of the Earth itself, which used to be the absolute standard of time, revealed its inaccuracies. The atom, and especially the caesium-133 atom, now provides the basis of the new standard of time. The best atomic clocks can keep time with an accuracy of the order of a second over a period of a million years. But scientists are still not satisfied...

Time, however, is more than just an abstract, regulated framework for our activities, universally controlled and posted up around us on millions of clock faces. It also embraces the biorhythms, the internal impulses that have no dials or hands but to which all living beings are subject. Some of these last only a few thousandths of a second, others several years. Most of them are synchronized with astral, diurnal, lunar or annual rhythms.

In a few hundred years, man has pushed back the frontiers of space, both outward towards immensity and inward towards the infinitesimal. We have achieved the same with time scales. We are capable of measuring the fifteen thousand million-year lifetime of the universe and also a femto-second (one thousand million millionth of a second).

Yet people have not changed the pace at which they walk, the pace of their heartbeats or even, significantly, their life-span. The rhythms of life have not varied. Even though certain hours may seem longer or shorter than others, time is the same for everyone, for it belongs to no one. ■

At peace with the past by Xiong Bingming

Chinese humanist thought contemplates the passing of time with equanimity

In Chinese culture, the supreme goal is the accomplishment of an ideal person. This humanism is so deeply embedded in Chinese thought that strictly speaking it leaves no room for philosophical debate about the nature of time.

The Chinese have always been strongly aware of the relationship between space and time and the living world, as the very terms used in their language to describe the world and the universe attest, but they have never sought to study these concepts in the abstract. Instead they set about developing instruments and techniques for measuring time. China had a functioning calendar by the second millennium BC, and it was in China that the sundial and the clepsydra or water clock were first developed.

What philosophical problems has the idea of time raised in China? And how has the subject been treated in Chinese literature, especially in poetry? These are the questions I intend to address, starting from the definition of time given in the *Huainanzi,* an important philosophical work written in the second century BC: "time is that which goes away and becomes the past; that which arrives and becomes the present."

'The Sun at its zenith is already going down'

For the ancient Chinese, the world was not the work of a Creator. Only later do texts describe the creation of the world by Bangu, a "cosmic man" whose body gave birth to the different parts of the world. And not until the fourth century AD, with the pantheon of Taoist gods, do we find a symbolic conceptualization of the various aspects of the universe at its creation. Then the original, undifferentiated state of non-being becomes the August Lord of the Way of Emptiness *(Xu huang daojun)*, who engenders existence.

If we can divide the past into two great channels, the history of the universe and of the human race respectively, it becomes apparent that the followers of Kongzi (the man better known in the West as Confucius) were primarily interested in the latter, which is to say in history properly so-called, putting the emphasis on social life and on cultural tradition. When Confucius refers to history, he is really only speaking of the reigns of the emperors Yao and Shun. In his view, cultural life and moral conscience—the great Confucian principles—only made their appearance in Chinese life under these two exemplary emperors.

The Taoist vision, though, extends beyond human life to examine the origins of the Earth and the heavens. According to Laozi (or Lao-tzu, as he used to be known in the West), the author of the basic Taoist text the *Daodejing* ("The Book of the Way and its Power"), "There was an indeterminate being before the formation of Heaven and Earth." In another passage he pushes back the horizons of time: "The Dao begot One. One begot Two. Two begot Three. And Three begot all other beings."

This "succession" obviously takes place in time, but it also goes beyond the very notion of temporality. For "non-being" does not disappear with the creation of being; on the contrary, it is the very basis of being. Its primordial importance can be compared with that of the space in a house, the emptiness without which the house itself could not exist.

Laozi has nothing to say about what preceded non-being at the very origin of the universe. Two centuries later another Taoist philosopher, Zhuangzi (Chuang-tzu), turned his mind to the problem, only to conclude that reason cannot provide any satisfactory response because of the limitations of language. For him as for Laozi before him, true knowledge transcends language: "Who knows does not speak, who speaks does not know."

The Legalists of the eighth to the third century BC were particularly interested in the theory and practice of politics. The only history that concerned them was social history. Their greatest figure, Hanfeizi, who died in 234 BC, had a "dialectical" conception of social development that has parallels with the theories of some modern historians. He introduced the idea of progress in history, departing radically from the Confucianists and Taoists for whom the ancient world was the ideal.

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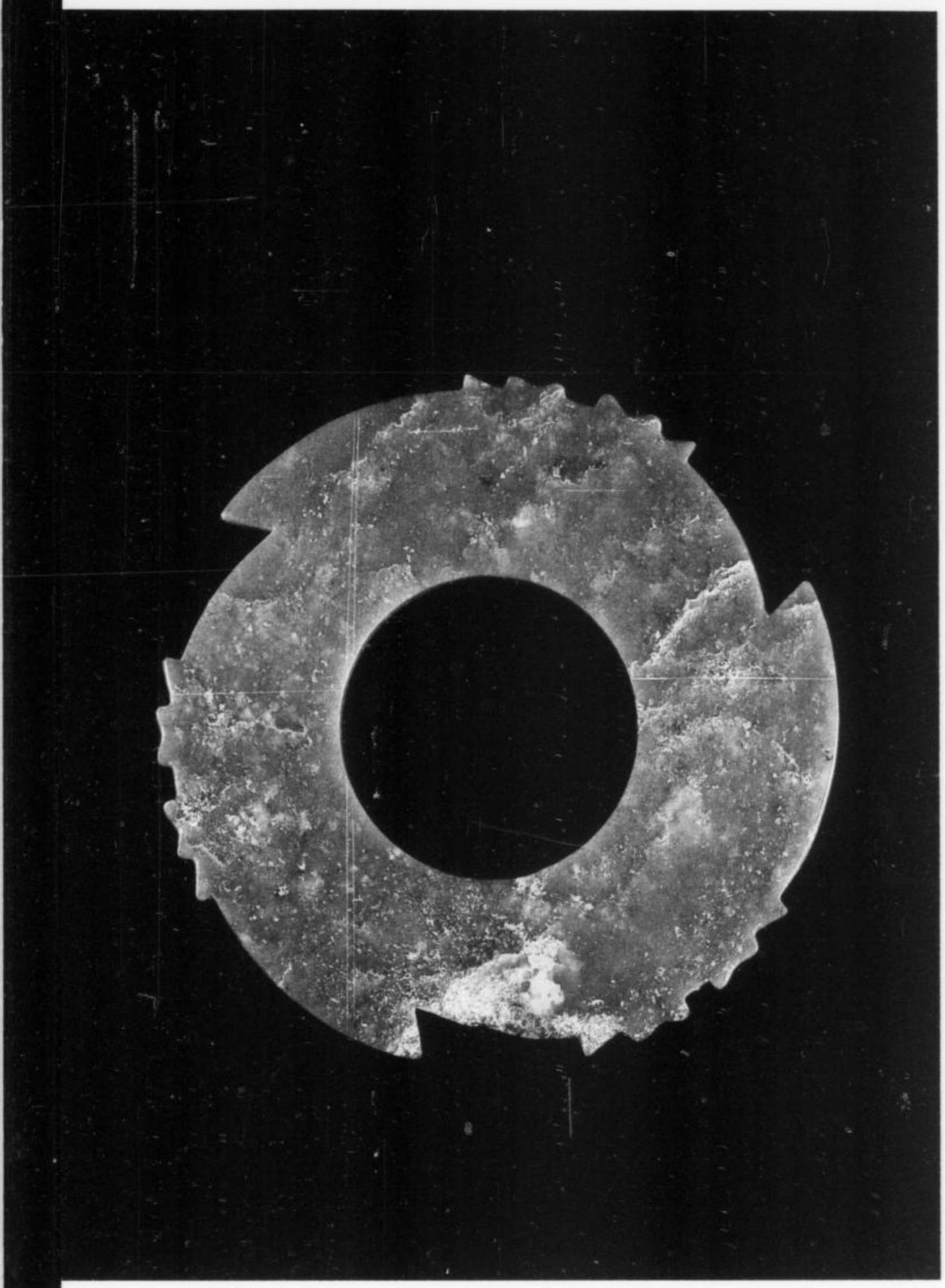
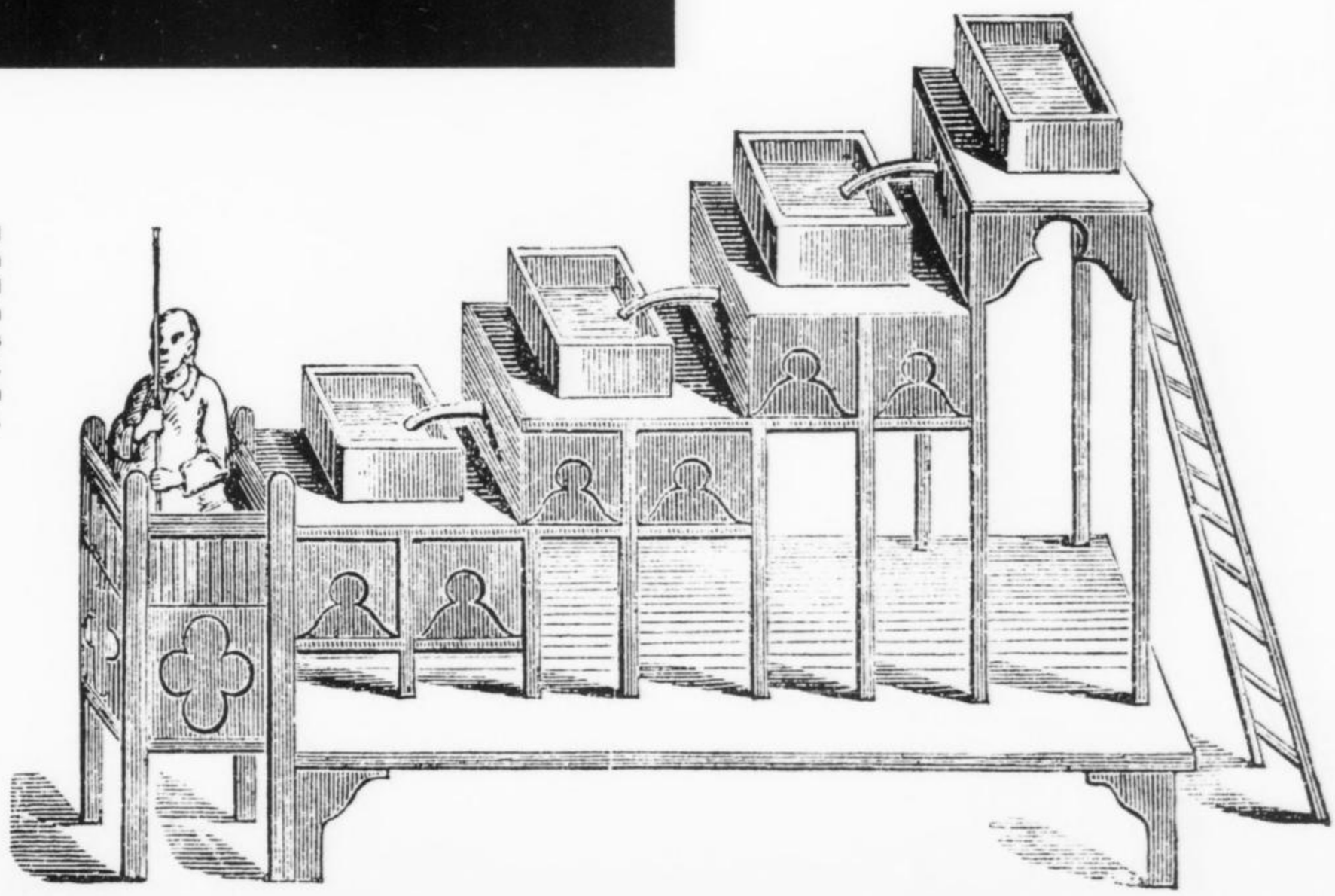
Chinese writer and philosopher, was formerly professor of philosophy and Chinese literature, and director of the Chinese department, at the Institut National de Langues et Civilisations Orientales, Paris. His publications include *Zhang Xu et la calligraphie cursive folle.*



The *bi*, a flat disk with a hole in the centre, was an astronomical instrument in ancient China, where it was also regarded as a symbol of heaven. A hollow tubular eyepiece fitted into the hole. Left, the notches around the circumference of the jade model shown here (c. 500 BC) correspond to the bearings of the major constellations.

But it was Huishi and Gongsun Long, the philosophers of the school of thought known as the Dialecticians, who in the fourth and third centuries BC became the first to consider time in itself as an abstract principle. Unfortunately, virtually nothing remains of Huishi's works other than the "Ten Paradoxes" that his friend Zhuangzi passed down without, however, including the reasoning that would explain the master's thought processes.

One of Huishi's formulas, "The Sun at its zenith is already going down", emphasizes the way in which time is both instantaneous and continuous. Another much-discussed paradox that has been explained in many different ways runs: "Today I am going to Yue (a region of southern China), and yet I arrived yesterday." Its purpose seems to be to underline the relative nature of such notions as "today", "tomorrow" or



A Chinese-designed clepsydra (water clock) in which time was measured by the water level rising in the lowest reservoir. It was used in the 11th century. (19th-century German engraving).

"yesterday". Almost as soon as we use the word "today", it has after all passed into yesterday. Two of Huishi's other paradoxes—"An arrow in flight is motionless even though it has not stopped", and "The flying bird's shadow does not move"—seem inspired by the philosophical thesis that it is not possible to conceptualize movement.

The Chinese interest in history showed itself very early on. In the Shang era, eleven centuries before the birth of Christ, court chroniclers were already recording events and discourses. Whenever one dynasty succeeded another, scholars were summoned to write the history of the dynasty that had ended. Many historical works were also written by individuals. Confucius initiated the genre with his *Annals of Spring and of Autumn,* which sought to provide both moral instruction and a critique of the past.*

The Chinese live in a symbiotic relationship with the past. This explains the importance of the clan and the cult of ancestors in daily life. In philosophy, it leads to a stress on the continuity of Chinese cultural traditions from the remotest past. Chinese writing has not changed over the centuries, and the problems debated by thinkers 3,000 years ago are still topical today. The events and personalities of China's long history still inspire writers and artists, who keep them alive, rich with symbolic associations, in the collective consciousness.

Ways of defying time

"We do not even understand life, so how could we possibly know death?" Confucius asked. Although his followers paid great attention to funerary rites and to the etiquette of mourning, they were not much concerned with the thought of what happens after death or the fate of the soul. They did believe, however, that dead people lived on in the memory of the living, and they proposed rules of conduct to assure that kind of survival. In the sixth century BC, for instance, Shusun Bao defined "Three things that will not decay": "practise virtue", "acquire merit" and "write texts to pass on to posterity".

For their part, the Taoists were so enamoured of life that they sought actively to prolong it. Laozi thought that it was possible to achieve longevity and defy the passage of time by preserving a child's vitality. The Taoist religion came up with various ways of doing this, from breathing exercises to the consumption of cinnabar-based elixirs. It sought to change humankind radically and give it immortality.

Buddhism, through the doctrine of *samsara,* introduced the idea of reincarnation. An adept who accumulated sufficient merit in the course of one life could be reborn in the next on a higher plane of existence, continuing in the same way through subsequent lives until he finally reached a state of timeless perfection in which the wheel of reincarnation would cease to turn. The Buddhist way thereby became a quest for self-annihilation "without life or death" as the monk Faling put it at the beginning of the Tang era.

Buddhism also introduced into Chinese thought the idea of the end of the world, which was to come only after long and precisely-calculated cycles of creation and destruction. Both the concept itself and this way of enumerating the different stages in the process were adopted and developed by the Neo-Confucianists of the Song dynasty, from the tenth to the thirteenth centuries AD. It is typically Chinese that the

***Sage beneath a Willow* or *The Drunken Poet*, anonymous Chinese painting of the Song dynasty (10th-13th century).**

* See the article by Huo Datong, "The emperor's all-seeing eye", in the *UNESCO Courier,* March 1990.

The savour of time

The arts of China, poetry, painting and pottery, are marked by a strong yet delicate impressionism which in itself denotes a way of savouring time. Chinese sensitivity being wholly attuned to the changing states of nature, fleeting variations of delight and the most exquisite moments of harmony were always illuminating not only the lives of noblemen, scholars and the monks of the great monasteries, but those of the uneducated poor as well.

The quality of time was appreciated in the same way as that of tea, paper, silk or any other of the thousand and one things which lend charm to life. Time came, went and returned: the time of the plum branch, of the bamboo stalk, of the maple leaf, and of pine branches, the time of the greylag's harsh cry, the sweet song of the oriole, the call of the quail.

So many different savours and scents impinging upon the consciousness stamped the quality of passing time. Poems and paintings were placed and dated and the solar period (twenty-four in a year) of their composition noted.

Claude Larre
French sinologist
("The empirical apperception of time and the conception of history in Chinese thought", from *Cultures and Time* © Unesco, Paris, 1976.)

annihilation of the world, however tragic it might seem, is nevertheless seen as a natural phenomenon rather than a punishment visited on the world by the gods.

The present: action or contemplation?

"Everything flows like water, nothing stops by day or night," Confucius wrote with feeling. The sight of running water brought to his mind the passage of time, tormenting him with a tragic awareness of the way in which life confronts man with tasks he knows he cannot accomplish. It is the first poetic meditation on the ephemeral in Chinese culture.

Faced with such transience, how should we react? Confucianists believe that people should seize the passing moment, develop strong personalities and make themselves useful to the community. Such restlessness and social responsibility are alien to the Taoist ideal, which is concerned with contemplation and communion with the universe. The Taoist sage seeks a path to the timeless even in the passage of time itself. His only ambition is to enjoy existence in the quietude of a peaceful and simple life. Time's passing causes him no anxiety that cannot be dissipated through the exercise of wisdom.

There is a well-known story by Zhuangzi, in which the author dreamed that he was a butterfly fluttering hither and thither without knowing it was Zhuangzi. When he woke up, he did not know whether he was Zhuangzi dreaming that he was a butterfly, or the butterfly dreaming that it was Zhuangzi. Maybe life itself, the story implies, is just a long dream from which death will awaken us.

It was, however, the writers and poets rather than the philosophers who were to express most sublimely the terror of time's passing. Expressing his anxiety about serving his country in a long autobiographical poem, the *Lisao*, at the turn of the fourth century BC, Qu Yuan, one of the founders of the nation's poetic tradition, speaks of his disillusionment and laments the flight of time. "Old age is taking me/Before I have been able to win renown." By the end of the Han era, in the second century AD, the attitude of poets diversified. Some chose Epicureanism ("Let us rejoice today./Why wait until tomorrow?"). Others pursued fame and reputation: "The human body...dies like everything that lives. Making a name, that's the real treasure." Yet others sought a solution in alcoholic oblivion. "It's an illusion, swallowing the drugs of immortality; better drink good wine and go dressed in silk."

In its ambiguity, the attitude of the best-known of the Song poets, Su Dongpo (1037-1101) seems particularly indicative of the Chinese poetic sensibility. In his *Memory of the Red Cliff*, he praises the heroic age of the Three Kingdoms while at the same time regretting that they have disappeared like so many chimeras. Is he optimistic or pessimistic? I would say both. He has a Confucian ardour for addressing worldly matters, yet at the same time shows a metaphysical detachment, not to say lack of involvement, that derives from Taoism. ■

Celebrants light incense sticks during a ceremony held to honour ancestors at the Temple of Foshan, Guangdong province, southern China.

Fon vodun cult dance in honour of Hebioso, divinity of celestial phenomena and germination (Nigeria).

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Disturbing rhythms by Honorat Aguessy

New social and economic forces are disrupting the traditional African awareness of time

AFRICA is so vast a continent and englobes so many societies that it is impossible to give a single all-embracing definition of what time means to the people who live there. There is time as it is experienced by individuals, but there is also what might be called "social time" which varies according to whether the context is political, economic or religious.

In the economic context, time seems to go by at dizzying speed. New consumer goods appear on the market at a rhythm which conflicts with that of the deeply-felt needs of indigenous African society. In politics, the time of the dominators is out of phase with that of those they dominate. The former seek permanence and the latter seek change. In religious life, the rapid pace of modern life is tending to strengthen attachment to the unchanging cycles of sacred time.

Time in African society is thus complex, dense and opaque. People live in a shifting kaleidoscope, feeling that everything is in a constant state of flux but that fundamentally nothing ever changes. The Fon people of Benin have a proverb which says that "Life is like a leaf tossed about on the surface of the water". Time in the individual conscience is not isolated from collective time. It overlaps with the different forms of collective time and is modified by them.

Exposed to the frantic rhythm of the consumer society, people find that their attention is captured and diverted by an endless torrent of new products. To parody Descartes, one might sum up this form of subjection to time with the formula "I consume, therefore I am". In spite of themselves, people are caught up in a social time scale which is alien to that of local modes of production.

It is just as difficult for the individual to master the processes of time in politics. People find it hard to grasp the ins and outs of political situations which are full of surprising conspiracies and futile clashes, and are not even intelligible to those immediately involved. They simply get the impression that politics is a complex pattern whose strands are woven and unravelled more slowly than those of the economic fabric.

In contrast to these fluctuating temporalities there are the permanence and the recurrence of religious life. Whether the dominant context is that of Christianity, Islam or traditional religions, the religious year is cyclical and its course is punctuated by the recurrent events that mark its eternal return. It has not been much affected by the changes that have occurred elsewhere in society. Although there are signs that traditional religions have adapted to the demands of the modern world, their spiritual foundations—the true memorial of the history of African societies—remain intact.

In the traditional calendar, which is based on well-omened days and ill-omened days, the organization of time has not changed. In the Fon calendar, which governed the actions of the religious authorities (although other people also took an interest in it), symbols on a piece of cloth indicate the significance of different lunar days which correspond to certain events in people's lives. The day on which everything you undertake will be successful is symbolized by a kind of smooth, shining, grey-green bean, the *ajikwin*. A small bone indicates a day on which it is best not to attempt anything. This calendar was constantly consulted by people who wanted to be sure of not swimming against the tide. The underlying idea is that every important undertaking has its time and its rhythm.

This social stratification of time sheds some light on the nature of underdevelopment in Africa. Underdevelopment is not a lack of development but development of a dual, distorted kind. Endogenous development is disturbed and thwarted by exogenous development, just as time perceived as communion with the memory of society and the cosmos is disturbed by time which is associated with the repeated appearance of new gadgets and the pressure of economic precariousness.

The time of renewal, for Africa, is that which respects the values of this memory and perpetuates it in such a way that society can be receptive to modernity. African society bends before blind and ephemeral forces from outside, but it does not break. Its time is only just beginning. ■

This 30-day calendar of the Fon people of Benin consists of cowries, fruit stones, pebbles and other objects stitched onto a strip of cloth. Each object corresponds to a specific day. The calendar was hung lengthwise on the wall and a marker was fixed to the cloth to indicate the day.

A many-sided concept by Ahmad Hasnawi

The vision of time in Islamic culture has so many aspects—religious, philosophical and scientific—that it cannot be reduced to a simple formula

WHEN seeking to describe the concept of time, space or any other basic notion specific to a given civilization, it would be useful if we could find a distinctive form of words to sum up that civilization's character.

But this would be to fall victim to two simplistic assumptions. One is that civilizations are discrete and unconnected. The other is that each civilization has its own special insight into time, which is reflected in various ways in the "regions" of that civilization.

The following brief comments about the concept of time in Islamic culture are intended to suggest that these two assumptions cannot be accepted at face value.

Qur'anic time

We cannot here consider the Qur'anic view of time in all its richness, and shall therefore dwell on three points only.

The first is that the Qur'an integrates time as an essential aspect of revelation. The "divine teaching" was adapted to the circumstances of the Prophet's actions, and responded to his doubts, his questionings, and the situation of the infant Islamic community as regards both its organization and its relationships with other communities.

The second concerns "sacred history" as it develops in the Qur'an in accordance with this divine teaching. The early Meccan revelations focused on the cycle of creation-cosmic break-up and total destruction-recreation, in which every soul is judged according to its actions. But in the middle of the first Meccan period (from the beginning of the revelation until the years 615-616) religious history acquired temporal substance. In the first phase this history mainly took the form of the manifestation of divine judgements on the peoples who rejected the Word and on sinful communities. But soon this aspect, while not disappearing altogether, gave way to a history of the divine revelations, which established a genealogical and spiritual continuity between the bearers of these revelations, each confirming his predecessor's message.

The third point concerns a basic temporal notion in the Qur'an, that of a "stated term" or "fixed term" *(ajal musamma),* which is applied in particular to the lives of people, human communities, and the world. Behind this and similar expressions lies the idea of an "allocated span"

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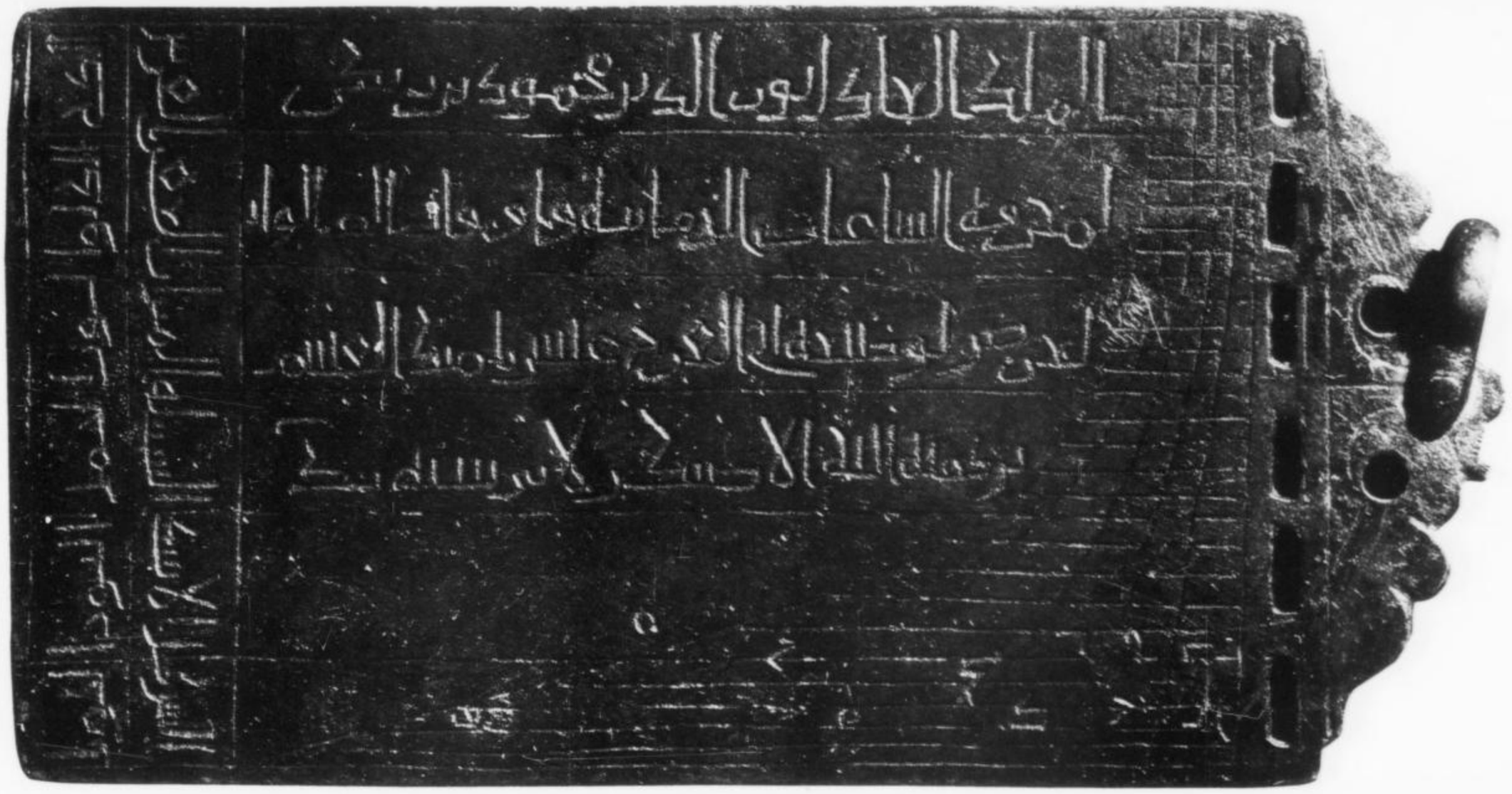


Copper sundial dating from the reign of the Muslim ruler Nur ad-Din (Nureddin), late 12th century.

whose duration is fixed by divine decree—an idea in keeping with the affirmation of God's prescience and omnipotence, but also containing within it the notion that the life-span of beings and things is in a sense subject to quasi-natural laws, to a divinely-ordained legal system.

Astronomy and liturgical time

The Muslim calendar is lunar. Liturgical time, especially the determination of the beginning and end of the fasting month *(Ramadan),* is bound up with observation of the New Moon. For secular time and the timing of the daily prayers unequal hours were used, their length varying according to the season and the latitude. Equal hours were mainly used in astronomy.

Muslim astronomers carried out intensive research into ways of predicting the appearance of the crescent Moon and of measuring time (there was a science of the measurement of time, *ilm al-miqat).* Particularly interested in liturgical time, they drew up tables to determine the hour of prayer for every day of the year, and developed sundials and astrolabes marked with curves corresponding to these times.

We feel tempted to suggest that these scientific developments were not actuated by liturgical needs. Firstly, jurists tended to exclude arithmetic when it came to forecasting the new Moon; and secondly research into the visibility of the new Moon was part of the natural development of astronomy. Indeed, prayer curves were probably only a sort of appendage to the theory and art of sundials and astrolabes. Scholars who claimed that their work was of value to the faith probably only did so in order to please the enlightened ruler who had encouraged them to take it up.

On the other hand, however, scholars' preoccupation with religion can be interpreted as a sign that they were fulfilling a social demand. This is confirmed both by the frequent use of sundials in mosques and also by the tendency of mosques to employ the services of a *muwaqqit,* or specialist in the measurement of time, who might, like the fourteenth-century Damascene Ibn al-Shatir, be a great astronomer. This social demand provided astronomer-mathematicians with a testing-ground for their theories.

Universal histories

Muslim historiography is characterized by its richness and the scale of its output. It was also extremely diverse, both in its subject-matter (urban, regional, provincial and universal histories; religious and secular histories) and in its method of presentation (genealogical, dynastic, annalistic or by generation), all these approaches sometimes being combined.

With the beginning of a strictly Muslim era, starting with the Prophet's Hegira or migration from Mecca to Yathrib (Medina), the annalistic form, in which events are recorded on an annual basis, gained a valuable chronological framework. The universal histories also contain attempts to synchronize the histories of the different peoples of the pre-Islamic period. The idea of a universal history in fact implies a single temporal continuum into which natural and cultural events are fitted.

"Worship timetable" indicating the hours of prayer at the Great Mosque of Xian, capital of Shaanxi province, northwest China.

The General's watch

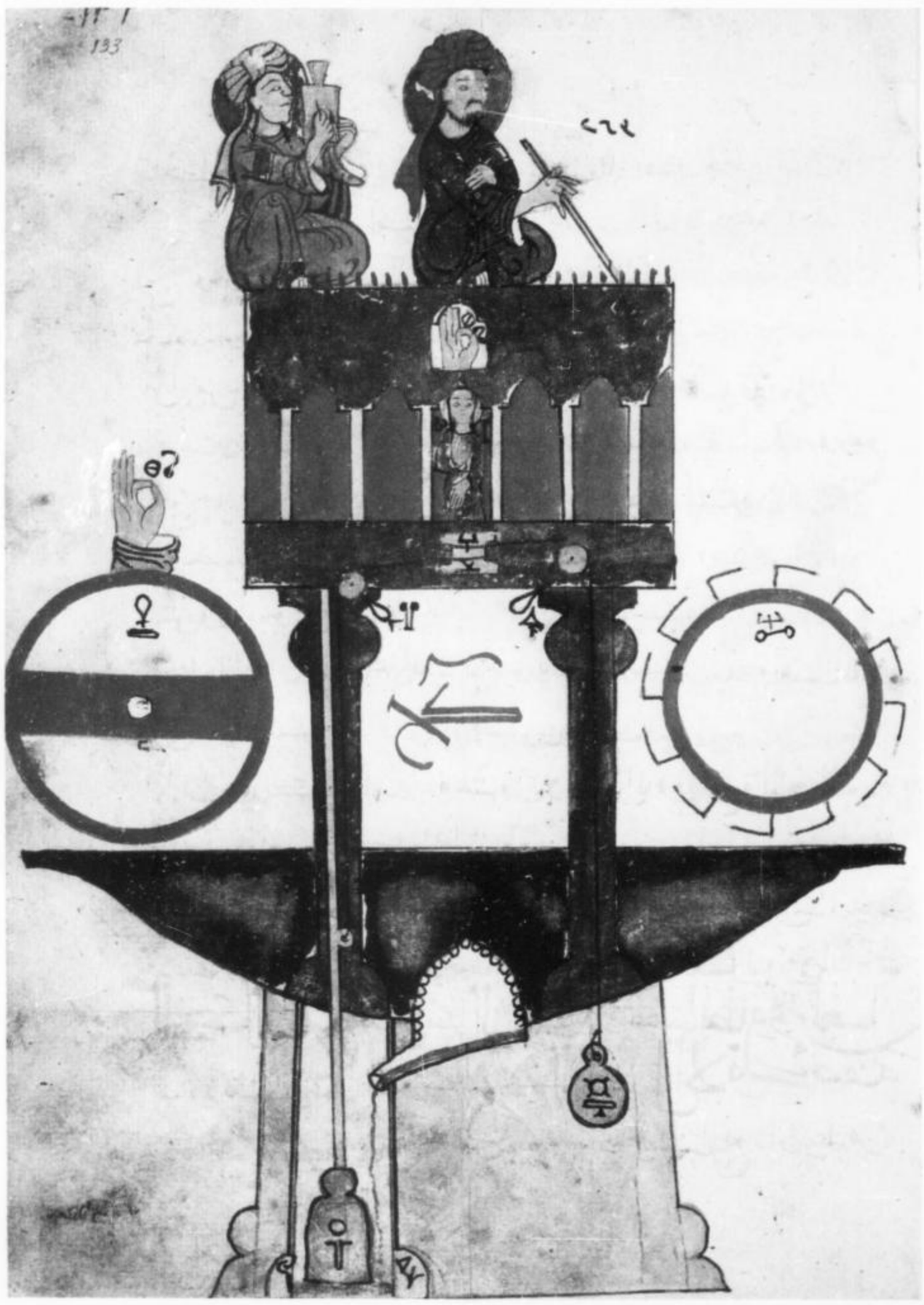
His Excellency General Washington *Paris 23 Feb 1789.*

Dear General,

Upon my arrival at this Place I spoke to M^r. Jefferson on the Subject of your Watch. He told me that the Man who had made Maddison's was a Rogue and recommended me to another, Romilly. But as it might happen that this also was a Rogue I enquired at a very honest Man's Shop, not a Watch Maker, and he recommended Gregson. A Gentleman with me assured me that Gregson was a Rogue, and both of them agreed that Romilly is of the old School and he and his Watches out of Fashion. And to say that *of a Man in Paris, is like saying he is an ordinary Man among the Friends of Philadelphia. I found at last that M^r. L'Épine is at the Head of his Profession here, and in Consequence asks more for his work than any Body else. I therefore waited on M^r. L'Épine and agreed with him for two Watches exactly alike, one of which will be for you and the other for me....*

Gouverneur Morris

(Letter to George Washington, in *A Diary of the French Revolution by Gouverneur Morris 1752-1816, Minister to France during the Terror* © Houghton Mifflin Company, Boston, 1939.)



Water clock with automata as described in al-Jazari's 13th-century *Book of Knowledge of Ingenious Mechanical Devices.*

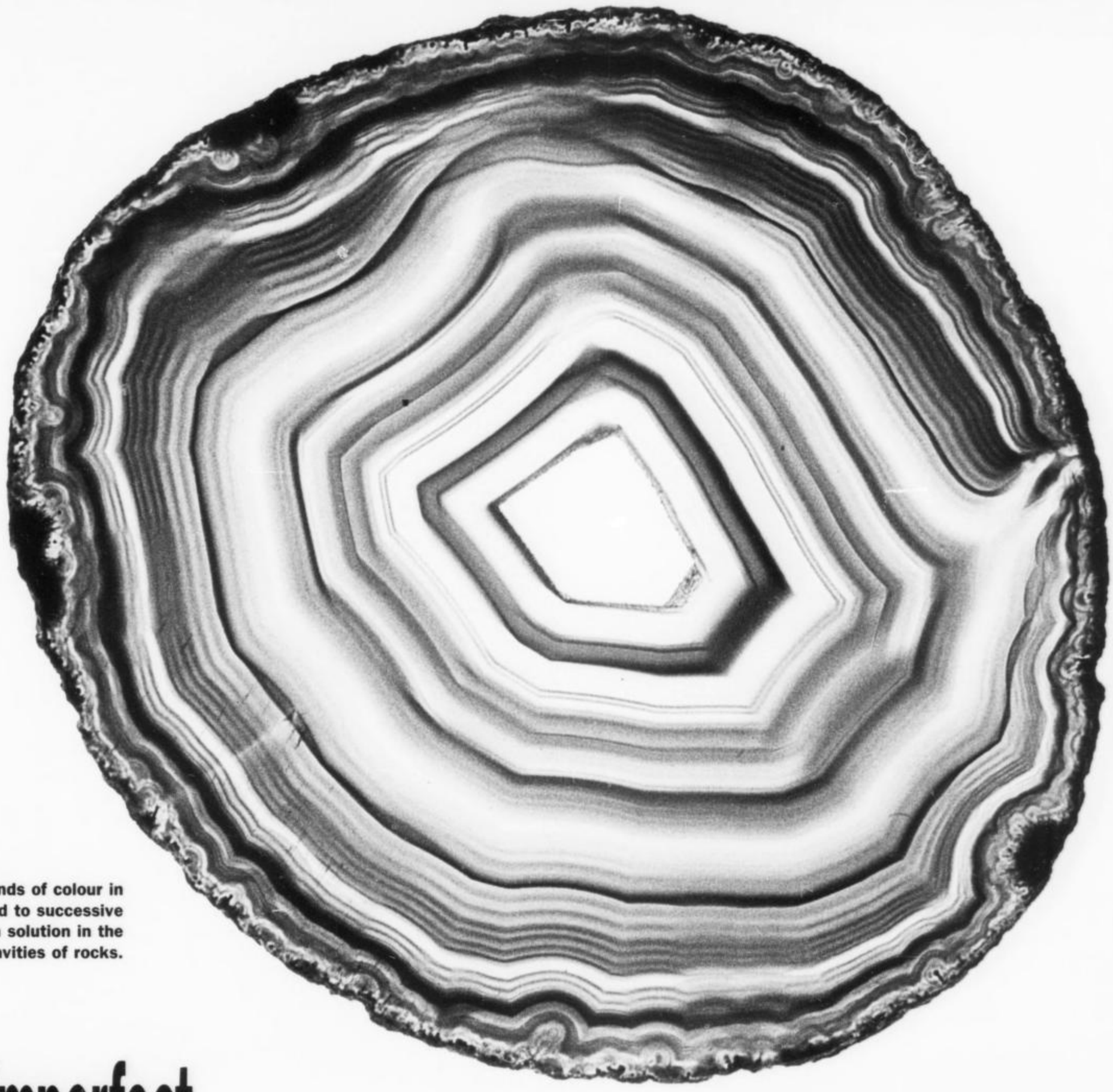
At the end of the eighth century and the beginning of the ninth, most Muslim theologians adopted an atomist doctrine, which dealt both with matter (and the accidents that might attach thereto) and with time. According to this doctrine, bodies consist of indivisible homogeneous particles, which are distinguished from each other only by the presence in them of accidents which endow them with a given characteristic. Some theologians (the Mu'tazilites) held that bodies comprising these atoms and certain accidents last beyond the moment when they come into being. Others (the Ash'arites) considered that every accident is continually recreated by God, just as atoms and bodies only last by virtue of an accident which is continually recreated in them by God.

The world: finite or eternal?

Muslim philosophers, whose philosophical activity followed in the wake of Aristotle and the neo-Platonists, opposed the theologians not only over the doctrine of atomism (for them, as for Aristotle, time was continuous) but also as regards the eternity of the world.

Al-Kindi (d. circa 866) held that the world had a finite span; but from al-Farabi (d. 950) onwards philosophers adopted the thesis that the world is eternal. They did not deny the world's causal dependence on first principles, and on God, but they did not recognize a first moment marking the beginning of the world. The debate between supporters and opponents of the idea of an eternal world involved problems relating to infinity, causality, the logical difficulties inherent in the idea of a beginning of the world, and the relationship between knowledge and divine will on the one hand and time on the other.

This brief account of Islamic thinking about time shows that it is not a single body of thought characteristic of Islamic culture as a whole; nor can it be defined by a form of words that would englobe all its variants. There have been sporadic attempts to explain certain temporal behaviour patterns in present-day Islamic societies by presupposing a specifically Muslim view of time; but this is merely to introduce (in addition to the two assumptions mentioned at the beginning of this article) a sort of "cultural fatalism" to the effect that man's conduct and image are determined by a vision laid down as a timeless paradigm. ■



The concentric bands of colour in agate, right, correspond to successive layers of deposition from solution in the cavities of rocks.

Present imperfect by Fernando Ainsa

Trapped between a mythical past and radiant visions of the future, the present in Latin America is often overlooked

'THE further the boat goes the more its passage becomes a journey into time and the history of the landscape." Thus, in surprise, the hero of the novel *Canaima*, by the Venezuelan writer Rómulo Gallegos, as he travels up the Orinoco to its source in the heart of the forests of Guiana. His character needs no Wellsian time machine to cross the watertight bulkheads of seemingly time-arrested Latin American history.

Such an experience is no mere literary gambit. Travellers who range the continent may get the impression that they are living in another era. By boat or plane, on foot or on muleback, they can trace the course of history backwards from ultra-modern capitals to villages and tribes living as at the dawn of history. Past and present lifestyles coexist cheek by jowl, albeit separated and insulated from one another like the geological strata that mark out the history of mankind. This gives any thought about the perception of

Is not time as love is?

And an astronomer said, Master, what of Time?

And he answered:

You would measure time the measureless and the immeasurable.

You would adjust your conduct and even direct the course of your spirit according to hours and seasons.

Of time you would make a stream upon whose bank you would sit and watch its flowing.

Yet the timeless in you is aware of life's timelessness,

And knows that yesterday is but today's memory and tomorrow is today's dream.

And that that which sings and contemplates in you is still dwelling within the bounds of that first moment which scattered the stars into space.

Who among you does not feel that his power to love is boundless?

And yet who does not feel that very love, though boundless, encompassed within the centre of his being, and moving not from love thought to love thought, nor from love deeds to other love deeds?

And is not time even as love is, undivided and spaceless?

But if in your thought you must measure time into seasons, let each season encircle all the other seasons,

And let today embrace the past with remembrance and the future with longing.

Khalil Gibran
Lebanese writer
(*The Prophet* © Alfred A. Knopf, New York, 1964)

time a spatial connotation. "Latin America is a continent in which prehistoric man, medieval man and modern man can shake hands with each other", to quote the striking image of the Cuban writer Alejo Carpentier.

This characteristic, which means that the successive layers of pre-Columbian, colonial, African and modern art can all be seen at one and the same time, sometimes in a single landscape, has intrigued many travellers. When André Breton visited Mexico in 1938 he thought that in this world of superimposed eras he had found the natural setting for the Surrealist revolution. Others were to use expressions such as "magical realism" and "marvellous reality" to describe various features of the Latin American scene.

The perception of time has clearly become a matter of controversy since the European discovery of America. Past, present and future succeed one another not in a smooth sequence but in a chaotic evolution closely related to subjective factors such as intentions, wishes, life itself,

Street scene in Cuenca (Ecuador).

and to the feeling that Oswald Spengler called the "organic character" of time.

The idealized past of the pre-Hispanic Indian world contrasts strongly with the notion of a future of high technology and the hectic pace of international economic activity. But the past stands also for the nostalgia evoked by a pre-industrial, rural, patriarchal order of a kind that survives in many parts of the continent. It is a past that may be the model for a future sought both by reactionary conservatives and romantic revolutionaries.

No sooner was America discovered by Europeans than it became the repository of beliefs no longer current in Europe. There were many signs to suggest that the golden age of the origins of mankind existed in the New World—an era of plenty, of human happiness and loving coexistence, as celebrated by the poets and historians of Greece and Rome, with heavenly Arcadian landscapes, a warm climate, and a cornucopia of fruit—a state of nature. The time lost in Iron Age Europe was caught up in sixteenth-century America.

Christendom was to find a new eschatology in America. Instead of the traditional view, under which a temporal earthly world is set against an eternal celestial one, America saw the outset of an immanent dualism in which "times past" were part of this world. The era of early Christianity, the golden age and Paradise lost could be reproduced in a different setting here below.

Moreover, as the Mexican historian Miguel León-Portilla has pointed out, pre-Hispanic myths collected by missionaries and chroniclers themselves refer to an era in which mankind lived in happiness and plenty. Some people saw the American Indians as a people naturally inclined to justice, knowing nothing of the evils of property. There were even forecasts of a "silver age of the Indian Church", in which the virtues of the early Church would be recreated thanks to this rediscovery of spiritual purity.

This idealized version of the Indian past was served up by historians throughout the sixteenth century, became a commonplace, and survives to the present day in many books about ancient American civilizations. Endowing the pre-Columbian past with the virtues of an ideal economic, social and political system eventually leads people to believe that all the continent's subsequent ills stemmed from the Spanish conquest. This Manichean simplification of the situation before and after 12 October 1492 is still keenly topical. Five centuries after the shock of the encounter between two worlds, the conflicts between America's past, present and future still give rise to controversy and polemic.

The future as change and progress

The ideas of the Enlightenment, and a century later of positivism, gave America an acute perception of time to come. The passage of time became "evolution", and could even bring radical changes. Thus when their nations achieved independence people aspired to invent the future. Politicians and intellectuals began to organize what they called new times.

Time and change became inseparably linked, but the extent of change proposed for a given time span varied. Some people—Sarmiento in Argentina and Vasconcelos in Mexico, for instance—had such faith in progress that they thought of the future as a present in continual evolution, its growth depending on education and the momentum of population increase, whether stemming from immigration or a "cosmic" race born of interbreeding.

Others favoured radical, revolutionary change. A clean break should be made with the past. An impatient sort of trust in providence guided revolutions that shook countries in which nothing would ever be the same again.

Such telescoping of the future tends to make

the consciousness of individuals coalesce on a shared time scale. And this collective time scale is at one with a world view that has its own rituals, social values, beliefs, metaphors and language. In this situation time is not merely represented; it is also experienced. It produces a specific feeling.

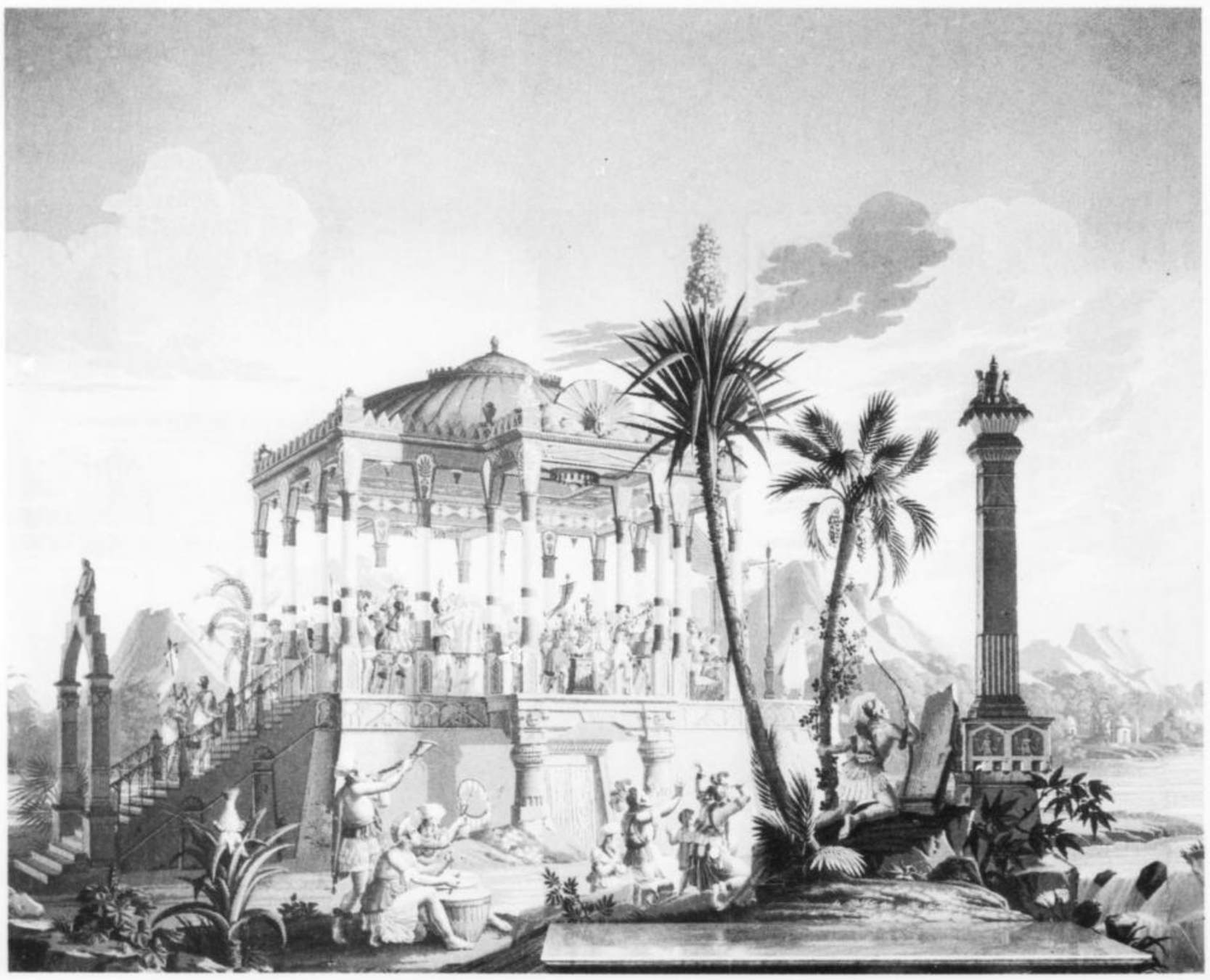
Between past and future

This feeling about time seeks its bearings in an oscillation between past and future. Human beings naturally tend to idealize the past and see it as better than it was, and also to neutralize their illusions about the future—the more so as they get closer to the present. This habit of continually upgrading the past and the future seems to meet people's deep need to justify their existence and give direction to their lives. The French writer and sociologist Jean Cazeneuve, who has investigated relationships between time and happiness in various cultures, speaks of recognition (in the sense both of acknowledgement and gratitude) of everything that becomes a memory. The archetypes of anticipatory awareness, on the other hand, are sustained by many clichés about the past. The Mexican essayist Alfonso Reyes has emphasized the need people feel to think that they have come from a better age and are moving towards another better age—the urge to counterbalance memories and hopes.

This dialectic of old and new, which has enormous symbolic significance, is not always fully appreciated in historical writing. Perhaps great literature can take account of it: Jorge Luis Borges, in *Historia de la eternidad* (1936), says that "preservation and creation, though at variance here below, are synonymous in heaven". In other words, the only possible reconciliation between the conflicting components of time is in eternity. Such a solution is not likely to satisfy an empiricist, for in Latin America this reconciliation between past and future is related to the difficulty of living in the present.

The great majority of the peoples of Latin America, a prey to problems of surviving in marginalized poverty or exposed to political instability and economic inflation, can only live from day to day. They are condemned to perform a daily balancing act, ignorant of the past and unable to rely on the future. The very word *mañana,* so often repeated in this context and habitually associated with the Latin American condition, is simply a way of deferring the solution of immediate difficulties to an equally questionable future.

Rather than idealizing or denigrating the past, or placing undue faith in the future, the best thing in this continent which is still known as the New World would perhaps be to engage in a search for the present. Such a search, as Octavio Paz said in his Nobel Prize acceptance speech in 1990, means neither renouncing the future nor forgetting the past. "The present," he said, "is the meeting place of all three times." This is *true* time—"the present, being present". ■



***The Incas*, an 18th-century French wallpaper motif inspired by Jean-François Marmontel's philosophical romance *Les Incas ou la destruction de l'empire du Pérou* (1777), which denounced intolerance and religious fanaticism.**

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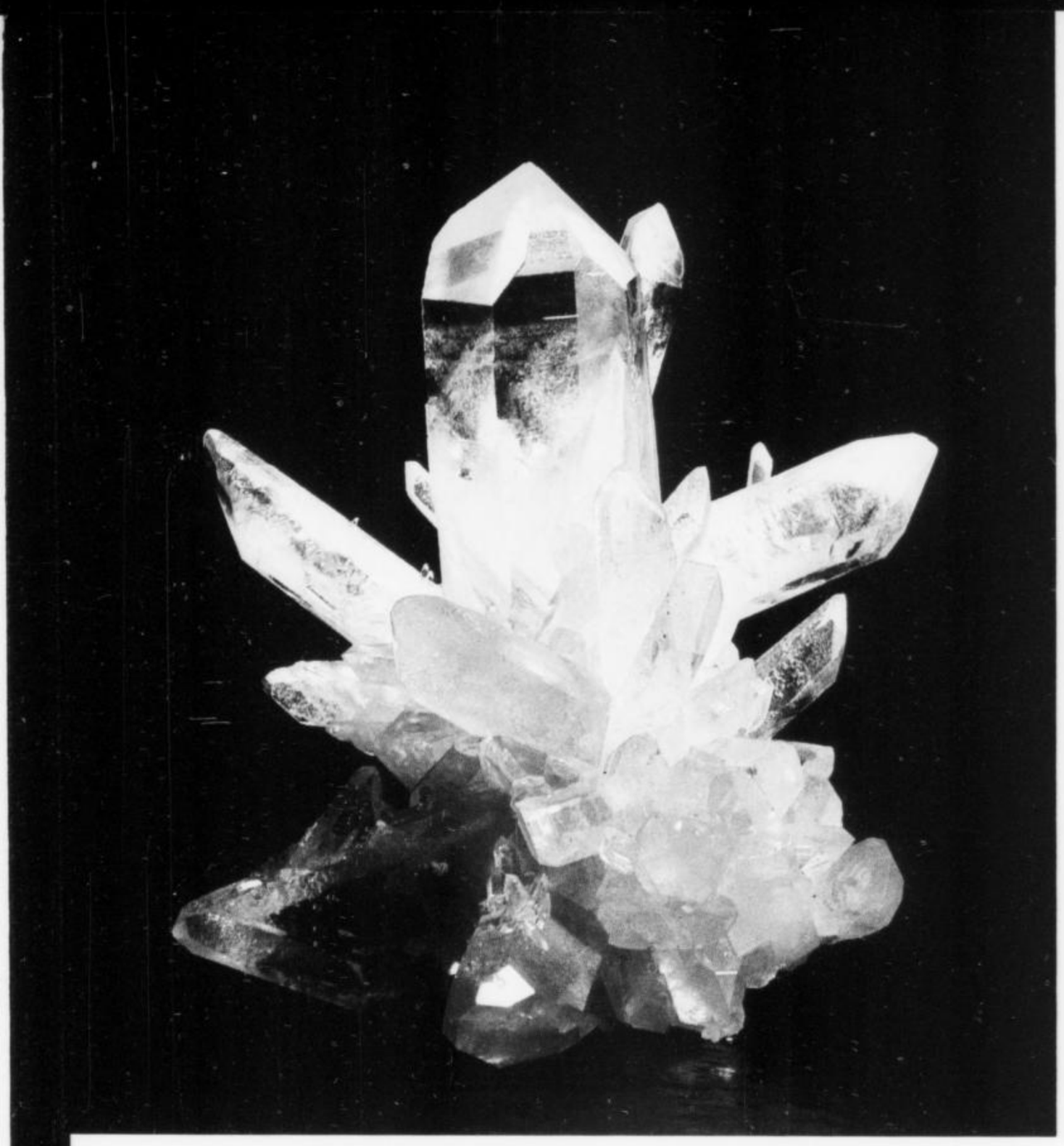
Uruguayan writer, is a UNESCO staff member. He is the author of many essays and novels including *Identidad cultural de Iberoamérica en su narrativa* (Gredos, Madrid, 1986), and *Necesidad de la utopía* (Nordan Comunidad, Buenos Aires/Montevideo, 1990).



Quartz time
by Ayyam Wassef

The modern world has shattered the concept of time on which Western society was nurtured

Quartz (the colouriess variety known as rock crystal), from Brazil.

FACED with the imponderables of time, history and the meaning of life, the so-called post-industrial societies of the West are chanting the sad refrain of crisis. Yet what is seen as a crisis is often no more than a period of change from one state of the human condition to another, the death rattle of one system of symbols challenged by another more capable of reflecting a new vision of the world. Modernity's cry of terror could only emerge from a way of thought still rooted in a vanishing world.

Modernity is, by definition, in a state of constant rupture, firstly with the old world—that of the Christian universe—and secondly with the new world, itself destined to become old in its turn. Condemned to continual renewal, modernity is a perpetual process of drift. Freed from the rationality of the past, the most insignificant aspects of the present break off in all directions. The legendary rivers of time, which once charted a linear vision of History, have merged into an ocean in which anything is possible. The history of events, with its clear-cut succession of cause and effect, has disintegrated, and a host of thematic studies attempt to reconstitute, step by step, a prism with an infinite number of facets.

What has been lost, seemingly for ever, is the sense of a continuum that held everything together. What substitute could there be for linear time stretched between two points—from sin to redemption—other than a discontinuous perception of a fragmentary temporality? Bereft of the will of God and of the unity of values that gave it cohesion, time becomes no more than an absurd succession of isolated moments. The vision of the flow of time is replaced by that of the passing of individual seconds. The notions of duration and expectation are replaced by those of instantaneity and precision. As the French thinker Gaston Bachelard said, "Time no longer flows, it erupts".

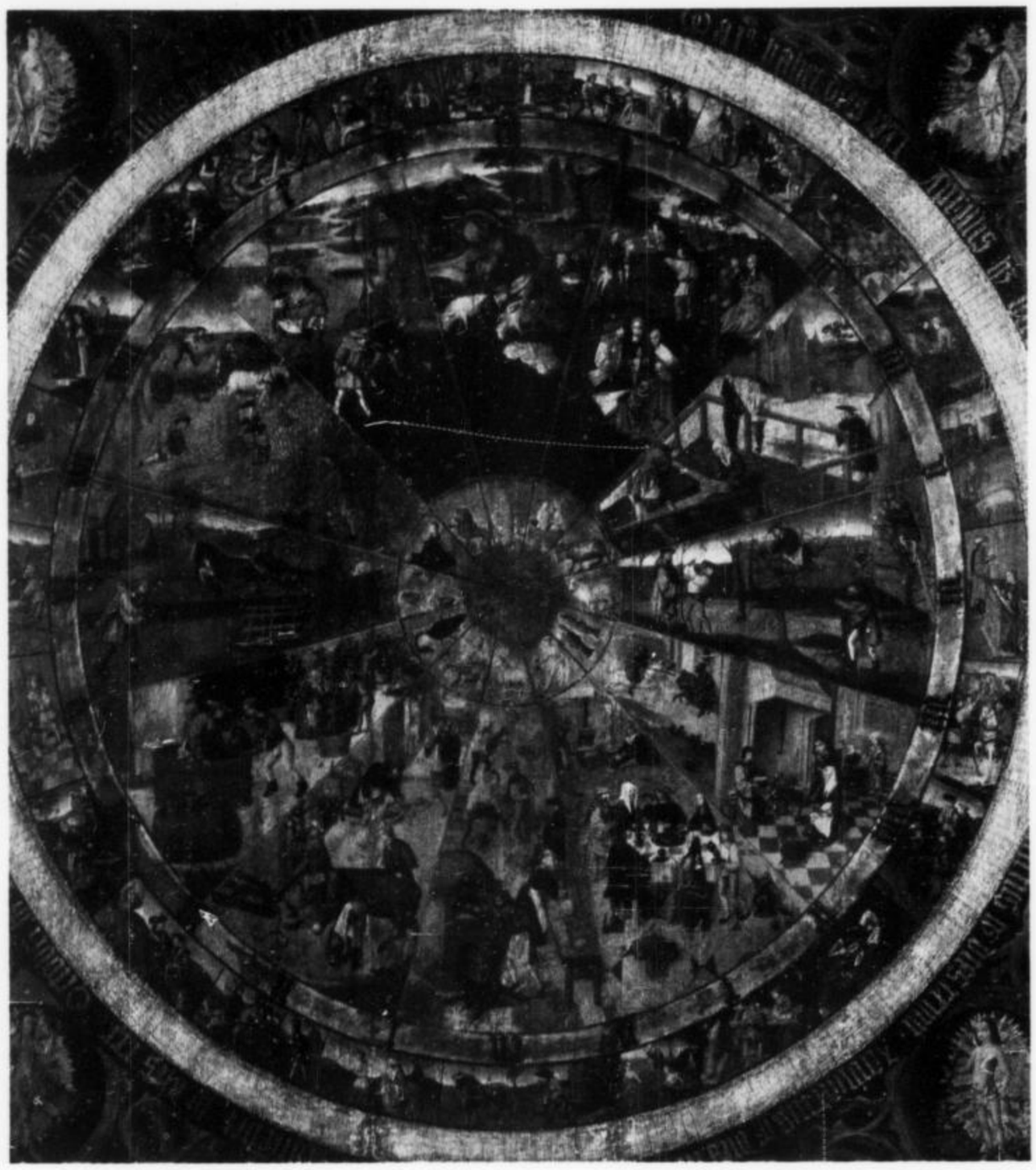
Quartz and the search for precision

Yet, subjected though we are to this senseless dispersal of moments, are we not still aware of a "code of poetic fidelity" to time? Where conceptual vision is lacking, are there not new metaphors of time? When we moved from geometric, space-defined time to more functional numerical time, we thought we were finally rid of time metaphors. Not a bit of it. Time may have pulverized space, but the dust of space is a new metaphor. And what if, against all expectation, in an allegedly disenchanted world, we are all wearing a metaphor on our wrists?

In a quartz watch, time is no longer measured by mechanical movement but by the vibration of a quartz crystal—a mechanically immobile, electronically regulated vibration that takes just one forty-thousandth of a second. Quartz has no part in any theological vision of time. Here, time emerges from the vibration immanent in the original matter and from that immanence alone. Instantly, just before they vanish for ever, the seconds show up in a flicker

of light. *Liquid crystals* display their hasty passage. Then, more slowly, the internecine warfare of minutes and hours is revealed. Time is "crystallized" to satisfy our compulsive interest in details, details, details. The contemporary mind is obsessed with the infinitesimal. Infinity is reversed and reconquered in the perfect density of the crystalline instant. *Liquid* crystals—the metaphor reunites discrete particles and reinvents flow. Time's crystals melt into duration and spread out into daily life.

Thus, the vibrations of a quartz crystal are calculated so as to attain extreme precision, which in turn determines the value of the watch itself. Yet, although they may be indispensable for scientific research, ultra-sophistication and precision in the measurement of time have little impact on our ordinary sense perceptions. Our eyes ignore the gaps between one numerical instant and another, thus recreating the sense of duration. There is, indeed, a larger time scale than that of the self-consuming second; there is a sense of duration that the micro-eternity of divisibility cannot smother. Watches go out of fashion, batteries run down, wrists become wrinkled.



***Monumental clock face* (c. 1500), by the Flemish artist Quentin Metsys.**

Living at top speed

At the very heart of his existence, modern man is enmeshed in a tangle of time scales and a variety of distinct yet simultaneous rhythms. Whether we like it or not, Universal Time controls our collective time. The same throughout the world, time has become a form of currency. The division of time into fixed units enables us to sell or to buy packets of activity which have become virtually autonomous objects.

Thus time becomes a closed dimension, a complete assemblage of empty compartments that have to be filled, that is to say, to be used in the best possible way. When time is not used, it is lost: nothing has been produced in it. The purpose of technology is, above all, to gain time, in other words to turn out, in the shortest possible time, products that will be consumed in an even shorter time. The time gained is used for further production.

Spare time, paradoxically, is subject to the same pressures. It is like capital that we possess and must not lose. Spare time is taken up with leisure activities and entertainment, just as work takes up time, and we apply ourselves to it in the same spirit of productivity. The product that we consume is a sense of well-being which we put to the service of greater productivity, which remains the only real objective.

This induces in us the absurd feeling that time is shrinking. The pace of life accelerates to compensate for this terrible diminution. That "life is short" is not a new perception, yet the Western world no longer builds cathedrals that will endure. A comparison of the quartz watch and another, very ancient, method of measuring time, the clepsydra, or water clock, will help us to grasp the change that has occurred.

The clepsydra measures the passing of each hour taken from us by the flow of water from one receptacle into another. However, the time that passes, like the water that flows, is not lost, but is stored in memory just as the water is stored in a receptacle. Loss is converted into gain, the gain increases as time passes and something remains of what is no more. Finally, when nothing is left, the receptacles are exchanged and the cycle starts again.

The notion of the cumulative nature of time and of perpetuity ensured by transmission (of a collective, linear memory) are lacking in contemporary perceptions of time. On the face of a digital watch the seconds flare briefly but for nothing. Nothing remains, nothing is gained. Time seems to be rushing headlong, wasted, towards...nothing.

By breaking with the notion of a linear continuum which, as it were, propelled humanity towards its ideal goal, and within which every event was meaningful to the extent that it favoured or compromised its achievement, we are breaking with a whole range of values—history, progress, hope for a better future. The hope that, at the end of time, all this would be achieved—which kept people in suspense—has given way to an anguished search for instant satisfaction. The

A floral clock

In St. Mark's Square, Venice, the pigeons assemble in their thousands at 9 o'clock and 2 o'clock every day. They wait there for the grain that people throw to them, not because the clock strikes but because they have an instinctive and approximate knowledge of the time.

What unconscious internal metronome determines this vast gathering? The answer is not simple and does not depend, like Linnaeus's floral clock, on a simple reaction to a known physical stimulus. Linnaeus proposed a floral clock consisting of 13 different flowers whose calyxes opened and closed at different hours between 6 in the morning and 6 at night.

Edouard Boné
Belgian biologist
("Temps et durée au regard du biologiste", from *Temps et devenir* © Presses Universitaires de Louvain-la-Neuve, 1984.)

quest for day-to-day pleasure is a more modest and less uncertain goal.

With no future in our sights, our desires can only be fulfilled by frantic consumption of the present. When the objective is eliminated, it reappears in many places but in impoverished and diminished guise. Just as the death of God as announced by Nietzsche has led to a desperate proliferation of the sacred, so the lack of a final justification for existence has spawned a desire to give some kind of meaning, however derisory, to even the briefest spans of time. Nevertheless, however rapid the pace of consumption and the acceleration of the rhythms of life, people die, finitude bears them ineluctably away.

Rhythm and repetition

Contemporary art forms reflect this rupture of the time continuum. One piece of evidence for this is the demise of the long book. In literature, narrators seem to have run out of steam; they no longer tell stories. At best they describe the trivial course of ordinary lives. Beckett is the supreme example of the writer of contemporary tragedy. He evokes a world of hiatuses, a world which is, along with language, at the point of dissolution.

However, though the tale may dissolve and fiction be impossible, the timbre of the voice, the punctuation, the scansion and the pace give time a new lease of life. The problem brings its own solution. Unity is rediscovered by expressing the fracture that has destroyed it. The death of time can only be evoked in time reborn.

This time reborn, however, is a different sort of time. Its unity is not that of a homogeneous flow, but lies in regularity and the mastery of rhythm. In music, rhythm has taken the place of harmony. It brings order to multiplicity, and makes a compromise between the tumult of the perceptions and the rationality of the senses.

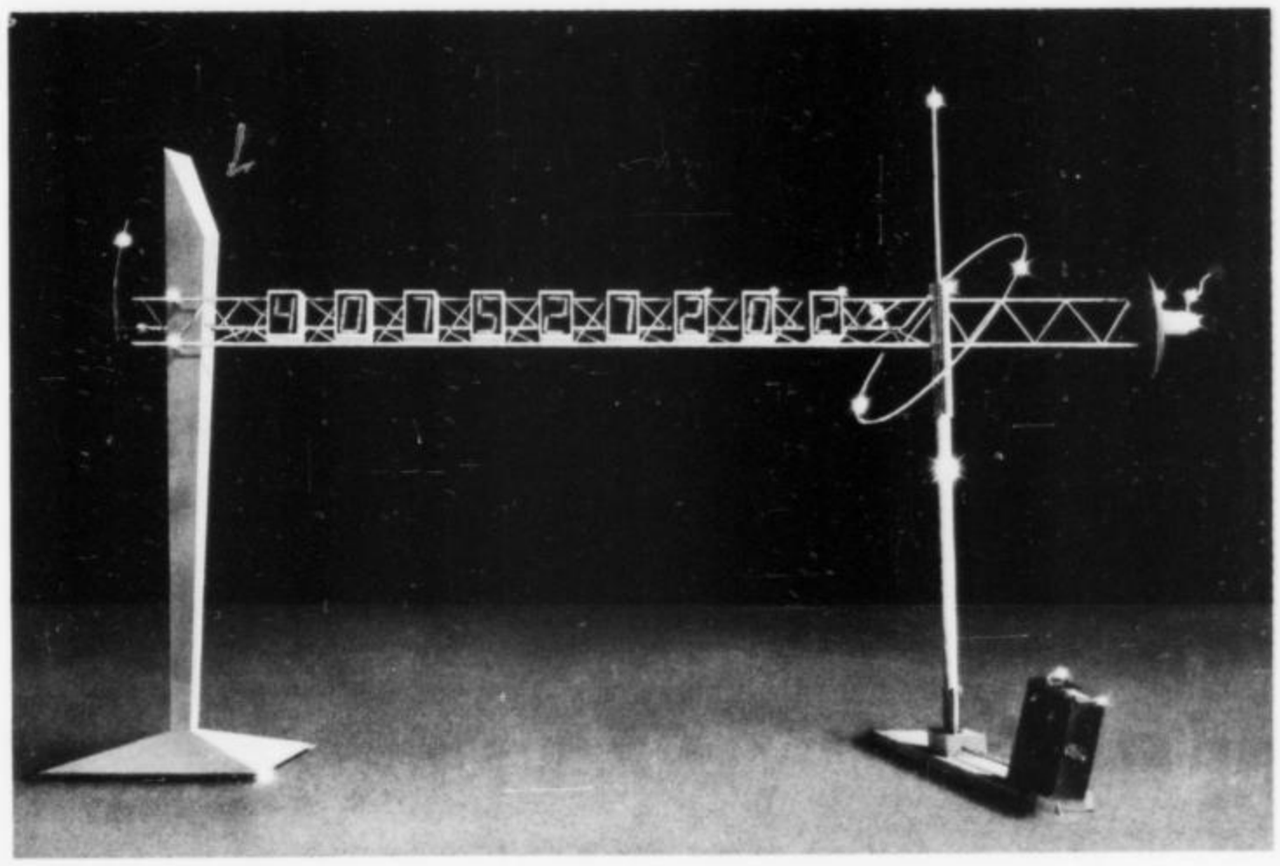
The novelty does not lie in the new rhythms introduced by technology, but in the development of rhythmic technology. No longer merely one possible interpretation among many, rhythm has become the fixed, autonomous framework within which variations are set. The "rhythm machine" dictates the broad outlines of a piece of music; everything else is a kind of musical small talk. In order to retain some freedom for invention, we have to concentrate on the technological production of new sounds or, as a last resort, on exaggerating the constraints of rhythm and giving vent to a terrifying torrent of verbal violence from between the ever more closely spaced bars of a cage of sound.

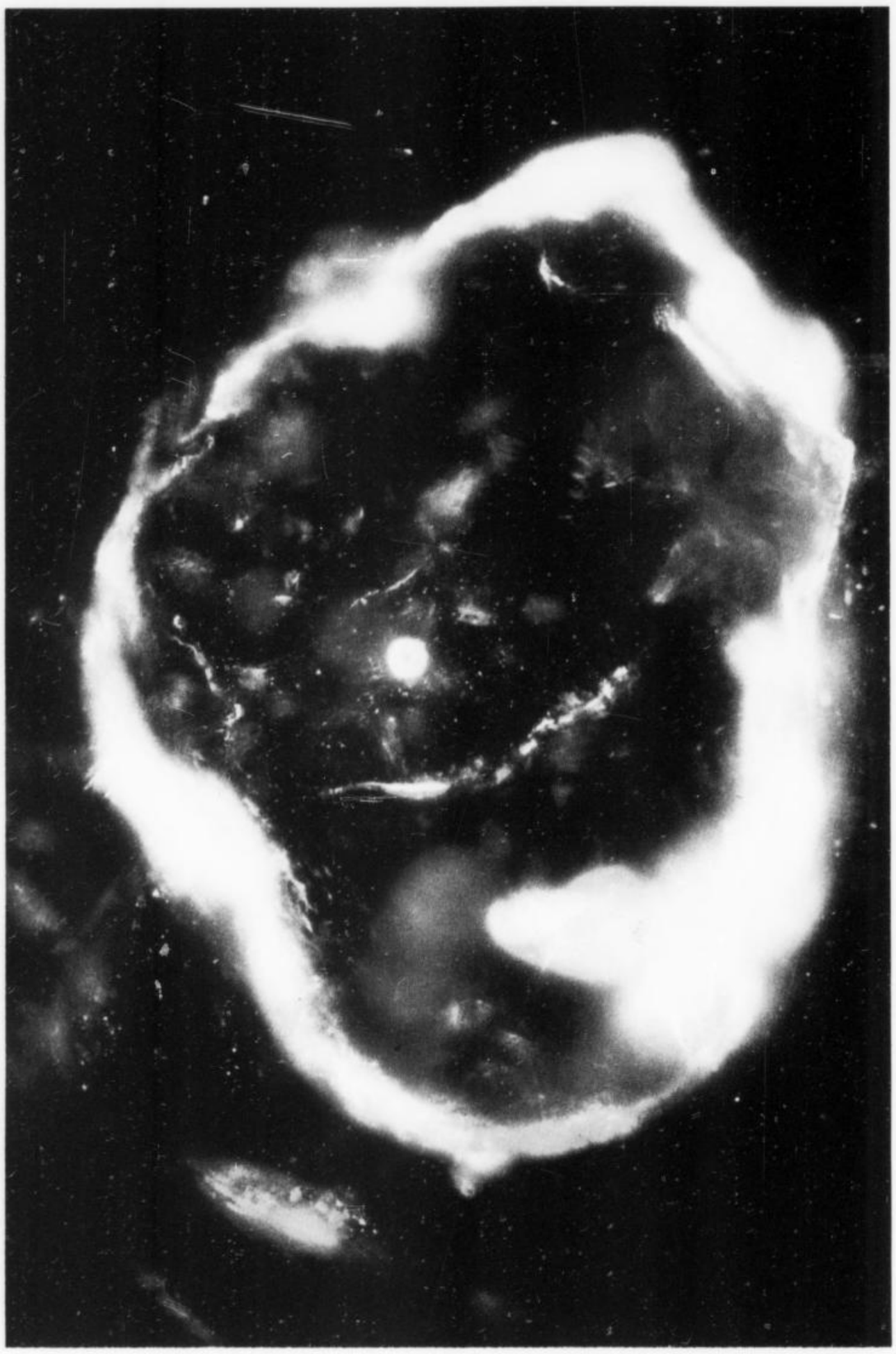
Contemporary music reflects the bewilderment of the voice caught up in the repetitive, impersonal world of technology. Xenakis was very near the mark when he spoke of the impossibility of communicating through repetition. All that technology has to offer is the possibility of manipulating and juggling with the basics of sound.

The cybernetic age

In its present state, music, par excellence the art of tempo, of manipulating tempo within time, gives us a picture of how, within the logic of cybernetics, the instant is assimilated to the notion of duration. For a computer, duration is simply a series of instants and their storage, and memory is merely a data bank. It is not just by

The Genitron, a digital quartz clock, was started in 1987 at the Georges Pompidou Centre, Paris. It is counting down the number of seconds until the year 2000. For 13 years, with no maintenance, it will be accurate to within a thousandth of a second.





Micrographic image of a grain of sand taken through a polarizing filter.

chance that the logic of cybernetics has emerged in an age when children can be conceived of fathers who died several years earlier. The future is no longer controlled by the laws of transmission, but by those of composition.

The age of creation by composition is equipped to combine temporalities in a generalized anachronism. It is still too early to say what effect this will have on our common perception of time, but it will certainly be considerable, since we are here touching upon one of humankind's oldest certainties—the laws of birth and death, reproduction and transmission. Already the immense capacities for storing information—everything, from the genetic code to the masterpieces of the Renaissance, has become "information"—have rendered obsolete the notion of collective immortality based on the transmission of knowledge. It would seem that we are returning to a certain form of determinism, in the sense that everything is *already there* and that the future will depend upon combinations of pre-existing possibilities. The past and the future are becoming merged into a compound present.

The age of creation by composition began with the visual industries, of which television, which creates more varied time warps than the cinema, is the most typical. With "live" broadcasts there is every likelihood that viewing time will become confused with real time. Television abhors the messiness of reality, and (like nature) it abhors a vacuum. When, due to some technical failure, there is such a vacuum, the presenter stammers away in real time—perhaps the only real time ever seen on television and a moment which seems to the viewer painfully long and inadequate. But the messiness of real life is never shown. Every effort is made to filter out the coarse realities and to blend them into a homogenized narrative sequence.

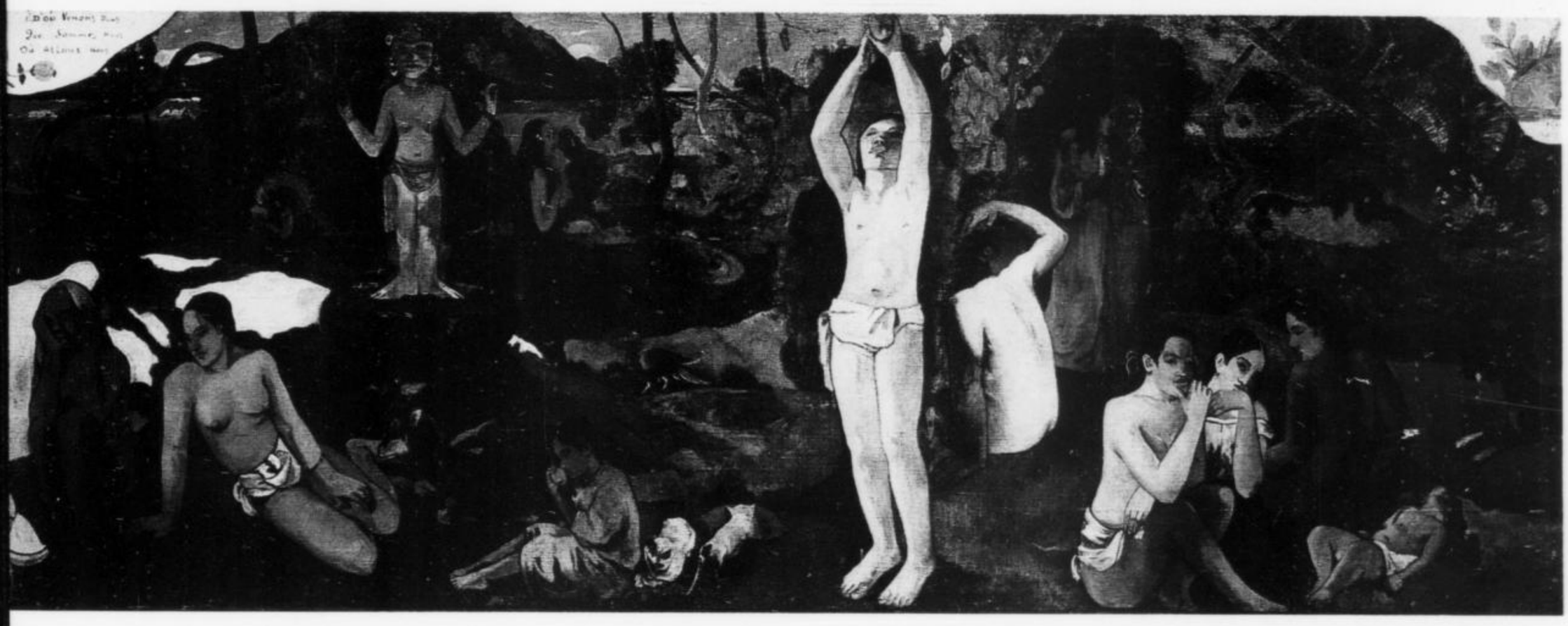
Television time comes to replace all other forms of time in our awareness. An event only happens if it has been seen on television, and however long it may actually have lasted, its importance is gauged by the viewing time allotted to it by the producer. A news item, the same pictures of which have been shown over and over again, becomes a tragedy with as many acts as the number of times it is screened. What does it matter, it may be asked, if the impression is false, provided that it has been collectively experienced? Are there, in fact, any truths other than shared lies? The viewer is reduced to a terrifying state of solitude. His or her only interlocutor is television itself, which indulges in endless self-appraisal and ensures that there is never the slightest moment of silence. Time is so crowded with images that it becomes impossible to see.

Is there any family resemblance between the liquid crystal display of a quartz watch, which registers a succession of instants frozen in time, and the television screen on which images appear in an artificially recovered continuum? Perhaps there is, but it is too approximate to be worth dwelling upon.

The uninterrupted procession of images on television has nothing in common with the agility of crystals suspended in an invisible flux. Time exists between the inscription of two seconds; above all, there is the possibility of a meaning. Between two recorded seconds, there is some empty, lost time. All that is needed to dispel the absurd is to build a bridge between the two seconds. Just as it makes a break between two instants, this gap alone makes possible their true reconciliation.

Thus, time torn apart, time interspersed with gaps, time shot through with emptiness, so bewailed by moderns, is perhaps the best hope of rebuilding new links between man and the world, between reality and meaning. ■

AYYAM WASSEF,
Egyptian essayist, is preparing a doctoral thesis at the University of Paris I (Sorbonne) on the theme of the individual in contemporary philosophy, and writing an account of her experiences as an Egyptian living in Paris.



'A desire for eternity' by Alexandre Cioranescu

Novelists who are haunted by time, manipulate it in their work, and try to escape from it by the very act of writing

Above, *Where Do We Come From? What Are We? Where Are We Going?* (1897), by the French artist Paul Gauguin (1848-1903).

OF all the familiar features of our daily lives, time is the one we know least about. We shall never fully understand its mysteries, still less isolate and tame it.

Yet time is not a distant, indifferent truth, like a star which we know to be inaccessible. We are totally dependent upon it. Time makes and unmakes us, obliges us to exist and yet not know what will become of us. Our pact with time is both metaphysical and make-believe. Yet though it leaves a permanent and indelible mark, its presence escapes us.

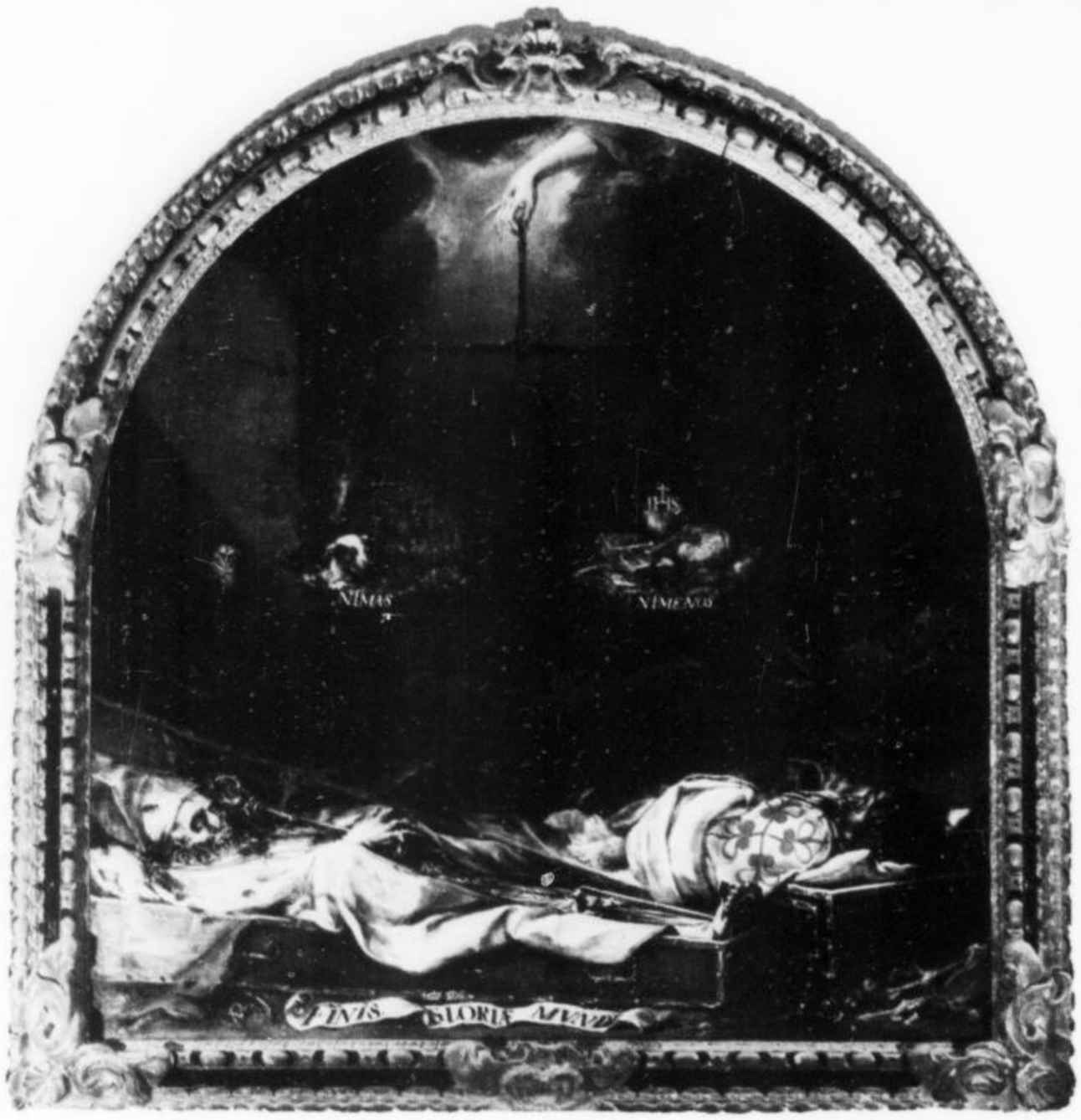
The important place time holds in literature and the arts is revealing, for not only does it have an impact on our lives and our thinking, it also weighs like an obsession on our imagination and on our feelings.

The old man with the scythe

Although no specific image is attached to it, the concept of time is omnipresent in the plastic arts. It has been portrayed countless times allegorically or symbolically, in terms of its attributes and of the traces it leaves behind.

First of all, time is seen as responsible for physical decline and death. Thus it has been identified with the figure of Death, traditionally portrayed in Western art as an image of old age and decrepitude and sometimes even as a corpse. Generally speaking, however, Time is depicted in medieval and Renaissance art in the shape of a skeletal old man with a long white beard. He holds a great scythe, the symbol of collective death, and carries a lantern, indicating that a life is about to be extinguished. This allegory is used to portray both Time and Death.

Some painters have evoked the passing of time by showing the contrast between old age and childhood or between the ages of man. The succession of the generations may be represented as a peaceful guarantee of continuity. It can also be portrayed as the violent irruption of the young who eliminate the old, the classic example being that of the Greek god Chronos (the Roman Saturn), who toppled his father from the throne only to be toppled in his turn by his own son Zeus (the Roman Jupiter). The notion of time is also evident in the theme of decomposition, as seen in sculptures of the dead and in certain paintings, the most eloquent of which is the Spanish artist Juan de Valdés Leal's famous work



Finis Gloriae Mundi (1672). Another form of reflection on the theme of the passing of time can be seen in the studies of ruins which were fashionable in the painting, poetry and garden design of the late eighteenth century.

***Finis Gloriae Mundi* by the Spanish artist Juan de Valdés Leal (1622-1690), an allegory on the vanity of the world and the flesh.**

Novelists who conjure with time

In literature, obsession with time is even more central. There are many ways in which the dread of time enters the process of literary creation, for literature more than painting lends itself to the evocation of time. In literature an image of time can be created which, if not more exact, is at least more intelligible and closer to our phantasms.

Literature has always drawn its inspiration from real life, from the mysteries of the inner life or the problems of human relationships. It is not surprising, therefore, that time should be so important in the structure of literary works, especially in epic or narrative literature. Time punctuates the novelist's thoughts. As the French critic Albert Thibaudet (1874-1936) once remarked, temporality is the key to the composition of the novel.

As in the theatre and in the epic poem (a genre that today has disappeared), the content of the traditional novel—its plot—is a voyage through time that mimics what happens in life. The episodes unfold in chronological order. It is rather like what happens in the theatre, where no actor would venture on stage before receiving his cue.

Logical and easy to follow, this type of narrative has been used in imaginative literature for over 2,000 years. It also allows a writer to take certain liberties. From time to time a classic author may suddenly say "I forgot to say that..." as a pretext for departing from a strict chronological framework in order to recount an episode which it would have been difficult to describe in its proper time sequence. Some novelists make excessive use of this subterfuge just for the pleasure of playing with time. In Laurence Sterne's *Tristram Shandy* (1759) the sequence of the story returns so often to the past that the action seems to go backwards rather than forwards.

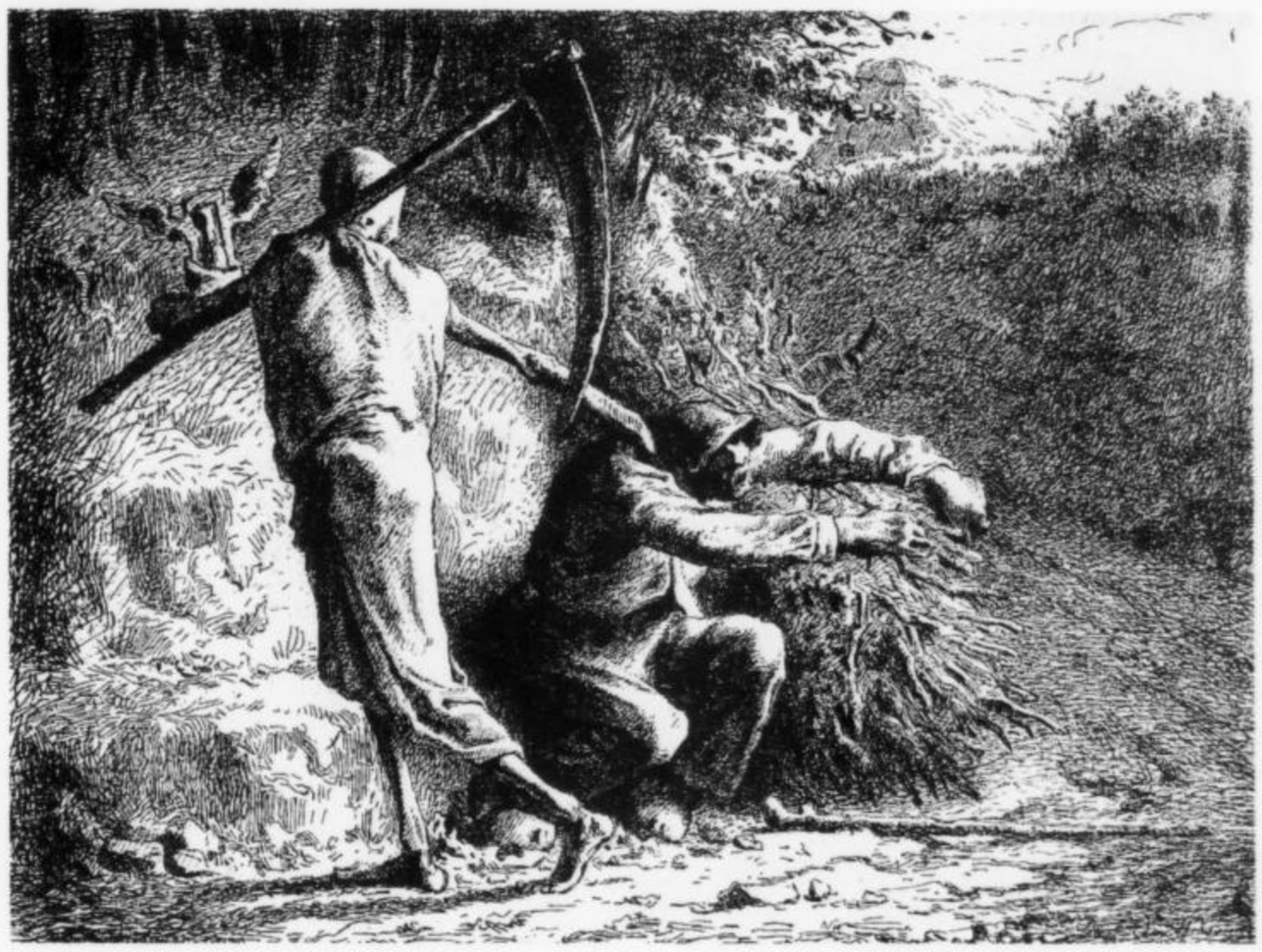
With the Romantics, playing with time became current practice in narrative literature. The simplest method was to use a kind of conjuring trick as the American author Washington Irving did in his famous tale *Rip Van Winkle*, the hero of which falls asleep for twenty years, perhaps to escape from his shrewish wife, whom he allows enough time to die.

Roaming through the centuries

The European Romantics gave a new importance to the recapturing of the past through memory. In the words of George Sand's *Lélia* (1833), "The main occupation of my life was constantly to turn back to lost joys". In the twentieth century, Marcel Proust's novel *A la recherche du temps perdu* is dominated by the narrator's search for "lost time". But "the remembrance of things past" is a difficult process because of what Proust calls the heart's intermissions—when feeling and memory do not go hand in hand. Memory only lights up the past in fits and starts. It is through an involuntary memory, not true remembrance, that time is regained.

Other writers have gone much further back in time. The great nineteenth-century Romanian poet Mihail Eminescu made his *Poor Denis* travel back to the beginning of the fifteenth century. *Ravage*, by the contemporary French author René Barjavel, is a novel of paradox: his traveller into the past finds himself unable to return to the present.

Novelists move about just as freely in the future. Anticipatory novels already have a long and glorious history stretching from the seventeenth century to the present day. One of the earliest was the seventeenth-century writer Abbé de Pure's *Epigone*. H.G. Wells's *The Time Machine* (1895), is a classic of time exploration which has inspired many modern works. Louis Sébastien



***Death and the Woodcutter* (1859), engraving after a painting by the French artist Jean-François Millet.**

Historical time and cosmic time

All my generation, from the Marxists to Sartre, is dominated by the discovery of History and of historicity, insofar as man is a being who lives in irreversible historical time. But I am opposed to such a reduction, not that I am afraid of History, but because man also lives in a non-historical time: dream time, time within the imagination, etc.

I do not see, in particular, any reason for the exclusion of cosmic time, which is not irreversible but cyclical, and so important for the human species, which is also part of the cosmos, as we are too inclined to forget. I simply mean that we cannot dismiss something that everyone experiences and knows: the rhythmic succession of day and night, the ceaseless round of the seasons. These are human experiences of a cosmological nature, in which time is cyclical. To take them into account does not entail an escape from History, but an opening upon an admirable and entirely palpable transcendence, which makes possible communication with nature, animals, and plants.

Mircea Eliade
Romanian historian of religions
(*Temps libre* No. 2, summer 1981, Paris)

Mercier's visitation of Paris in *The Year 2440* (1771) is another notable example of the genre.

There is another form of literature that delights in breaking the rules of time. Superficially it appears to respect chronological order but actually it scorns the notion of life-span, of "real" time, and, like the Wandering Jew, its characters roam across the centuries. The hero of Virginia Woolf's *Orlando* (1928) is sixteen years old at the start of the novel and thirty-six when it ends. This would be a perfectly normal period were it not for the fact that, in the meantime, 342 years have elapsed, during which the hero has assumed a variety of characters of both sexes. In Borges' story *The Immortal*, a twentieth-century antique dealer rubs shoulders with the great figures of Antiquity.

Many modern writers have no scruples about chronology and refuse to see time as a narrative constraint. The novel ceases to be action and becomes "stasis", or a contraction of time. In Alain Robbe-Grillet's "film/novel" *Last Year in Marienbad* (1961) the universe becomes "a perpetual present, which makes all recourse to memory impossible". Chronological telescoping and banality of action are the hallmarks of the works of Claude Simon. In William Faulkner's writing chronological disorder is so marked that to his *Absalom, Absalom!* (1936), an exploration across time which pays no attention to the chronological sequence of events, he felt it necessary to add a chronology indicating the time and place at which each episode occurred.

Seizing the moment

This deliberate attempt to banish temporality from literature is liable to be seen purely as an exercise in virtuosity. Is it not, perhaps, more apparent than real? Even when the attention is not drawn to it, the sense of time remains indelibly in the background. To pretend to forget time is to wish to eliminate the precarious, ephemeral nature of all that is touched by time. It is not time that the writer seeks to suppress but the fragility that time imposes on all things. Here the absence of time implies not a void, but a desire for eternity.

The mind is troubled by the eternal, the desire to endure—the dread of history is only a passing anxiety. Anguish comes from the cruel knowledge that eternity can only be attained within the void of the after-life. It is felt by all writers and poets. This is what William Blake was

***Imaginary View of the Grand Gallery of the Louvre in Ruins* (1796), by the French landscape painter Hubert Robert (1733-1808).**

thinking of when he wrote that it was his duty to "open up eternal worlds".

How can this challenge be met? Some valiant attempts have been made to identify the point at which the contradictions of time disappear. For Dante, these contradictions are resolved in a present that he finds in God. For Shelley, in a concomitant vision of past, present and future. For Novalis, time is a condensation into a spiritual present which identifies past and future by merging one with the other. If all these intuitions are no more than subterfuges of the imagination, they are nevertheless ways of giving permanence to time.

One much-used way of achieving this concretion is to make time stand still at a given moment. Jean-Jacques Rousseau relates how, on the island of Saint-Pierre, he experienced moments of happiness in which time ceased to exist and the present seemed to be eternal.

According to Proust, "a minute freed from the order of time has recreated in us, so that we can feel it, a man freed from the order of time"—it liberates us from what we have called the dread of history. In *Finnegans Wake* (1939), James Joyce condenses (or expands) the content of a moment's experience into 600 pages. The experience, however, is frustrating, since the time it takes to read the book dilates and dispels its time frame.

Writers have other ways of dispelling the dread of history. One of them is to create an artificial paradise. For Baudelaire, intoxication by wine or hashish is one way of obliterating time. Suicide, apologia for which are to be found in the works of Schopenhauer and in John Donne's *Biathanatos*, is another. Any method is valid if we accept Baltasar Gracián's proposition that "living is a way of dying every day". Yet it is a hollow victory to defeat death by dying.

What, then, is time in terms of the writer, the time experienced by the creator at work? Writing is a way of arresting time or escaping from it. Mircea Eliade wrote of "liturgical time", which vitrifies the present, links all such vitrified moments outside real time, and thus gives us a glimpse of eternity. Whether in literature, the visual arts, or scientific research, the creator is enmeshed in an imaginary present which, like mystic meditation or the contemplation of an artificial paradise, obliterates awareness of other times.

What does time mean for the reader? My own view is that the possibility of eluding the dread of history by escaping into what is permanent, if not eternal, has a counterpart in the free space of time spent reading. Readers are also creators in their fashion, since they rebuild in their imagination images which would otherwise remain lifeless and inert. At the same time they are immersed in the fixed time of reading. They may feel anguish but it will be a cathartic anguish that will affect their own present.

Reading, too, is a kind of liturgy. Perhaps Cortázar's "dear reader" was right in feeling, as he read, that "everything had been decided from the beginning". ■

ALEXANDRE CIORANESCU, Romanian-born writer specializing in literary studies, has published a number of works on French, Spanish and Romanian literature, as well as essays on comparative literature including "The Baroque or the Discovery of Drama" (in Spanish) and "The Mask and the Face" (1983, in French). He has also translated Dante's *Divine Comedy*, the writings of Christopher Columbus, and other historical works.

EARTH'S CHANGING SPEED

Palaeontological studies of the growth rate of fossil corals and other sedimentary remains have shown that between 300 and 400 million years ago the Earth took some 400 days to travel around the Sun, not 365 days as it does now. This suggests that the speed at which the Earth spins around its axis has decreased correspondingly. An American astronomer has recently produced figures which bear out this hypothesis. During the past 3,000 years, the Earth's rotation has slowed by a 47,000th of a second.

THE CHAIN OF LIFE

The World Wide Fund for Nature (WWF) warns that the interdependence of species is such that if any link in the chain is broken, the equilibrium of all life on Earth may be threatened. Unfortunately, millions of species disappear before they are identified. Of the estimated 30 million insect species, only some 900,000 have been classified, and while some 250,000 plant species are known today, it is thought that twice as many more remain to be discovered.

FLEA-FREE FLEDGLINGS

Researchers in Philadelphia (USA) have discovered that starlings build their nests from certain fresh green leaves, perhaps because these leaves secrete substances which act as an insecticide. Parasites in the nest would weaken the fledglings and reduce their chances of survival.

A PUBLIC HEALTH NIGHTMARE

The World Health Organization (WHO) estimates that each year there are some 250 million new cases of sexually transmitted diseases (STD), which range from genital herpes to acquired immuno-deficiency syndrome (AIDS). In many countries these diseases have become "a public health nightmare", says Dr. Hiroshi Nakajima, Director-General of WHO. The age-group most affected is 20-24 years, followed by 15-19 years and 25-29 years. According to Dr. André Mcheus, head of WHO's STD programme, these diseases are under control neither in the developing world nor in the industrialized countries, although in the latter the number of cases is rising less quickly than in the 1960s to the 1980s.

BREAST-CANCER GENE IDENTIFIED

A team of French researchers led by molecular biologist Pierre Chambon have identified a gene thought to be responsible for the spread of breast cancer in the body. Writing in the British scientific journal *Nature*, they report their discovery that a certain enzyme, named stromelysin-3, is activated by this gene and degrades the stromal tissue surrounding the primary tumour, thus allowing malignant cells to spread. The researchers conclude that the enzyme may represent a potential target for breast cancer therapy.

PIONEER 6 AT AGE 25

The American deep-space probe Pioneer 6, orginally planned to stay in service for 6 months, has been orbiting the Sun for 25 years and is still transmitting data on the solar wind. Since its launch from Cape Canaveral, Florida, on 16 December 1965, Pioneer 6 has travelled some 24,000 million km, orbited the Sun 29 times, provided the first measurements of interplanetary space, measured the Sun's corona and, in 1973, the tail of Comet Kohoutek.

DEBRIS IN SPACE

The American National Aeronautics and Space Administration (NASA) estimates that by the year 2010 the quantity of man-made debris circling the planet will total 3 million tons. Atmospheric drag, which causes objects to fall to Earth, has no effect at very high altitudes, so NASA has agreed with the Japanese and the European Space Agencies that spacecraft should be designed which will not eject any component at a height greater than 200 miles (322 km).

WORLD POPULATION GROWTH

According to World Bank projections, world population (estimated at 5.3 billion in 1990), will grow by more than 90 million annually until the late 1990s. Within 20 years, it will total 7 billion and could reach 11 billion by the end of the next century.

REMOTE SENSING AND THE ENVIRONMENT

The 24th International Symposium on Remote Sensing of Environment will be held in Rio de Janeiro, Brazil, from 27-31 May 1991. Remote-sensing techniques involve the measurement from aircraft or satellites of electromagnetic radiation from the ground, and the data is generally displayed in the form of photograph-like images. Possible applications include cartography, agriculture, sylviculture, hydrology, geology, oceanography, and mineral and oil exploration. Access to such data is essential for resource planning and mitigation of the effects of environmental degradation.

MAX ERNST CENTENARY

A major exhibition to mark the centenary of the birth of German painter and sculptor Max Ernst (1891-1976), a leading advocate of irrationality in art, is being held at the Tate Gallery, London, until 21 April, when it moves to Stuttgart (until 4 August), Dusseldorf (until 3 November) and Paris (until 27 January 1992). On show are 200 paintings, drawings, collages and sculptures on loan from European and American galleries. They include three major works, *The Elephant Celebes* (1921), *Pietà* (1923) and *Oedipus Rex* (1921), which mark the artist's move from Dadaist nihilism to Surrealism.

ANALYSIS OF REPLIES TO A *UNESCO COURIER* SURVEY

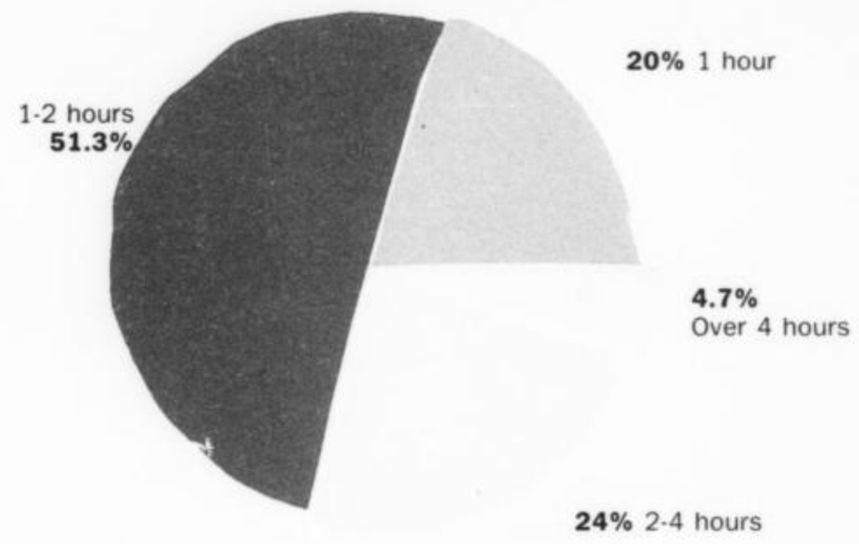
READER PROFILE

We have recently completed an analysis of replies to a questionnaire that was sent out with the January 1991 issue of the ***UNESCO Courier*** to subscribers to the French edition. The number of replies we received far exceeded our expectations and in itself demonstrates the considerable interest our readers take in the magazine.

Those who took the time and trouble to reply have provided us with a mine of detailed information about who they are and what they expect of the ***Courier.*** This information will be invaluable in helping us to further improve all aspects of the magazine, while remaining faithful to an editorial formula which readers strongly endorse.

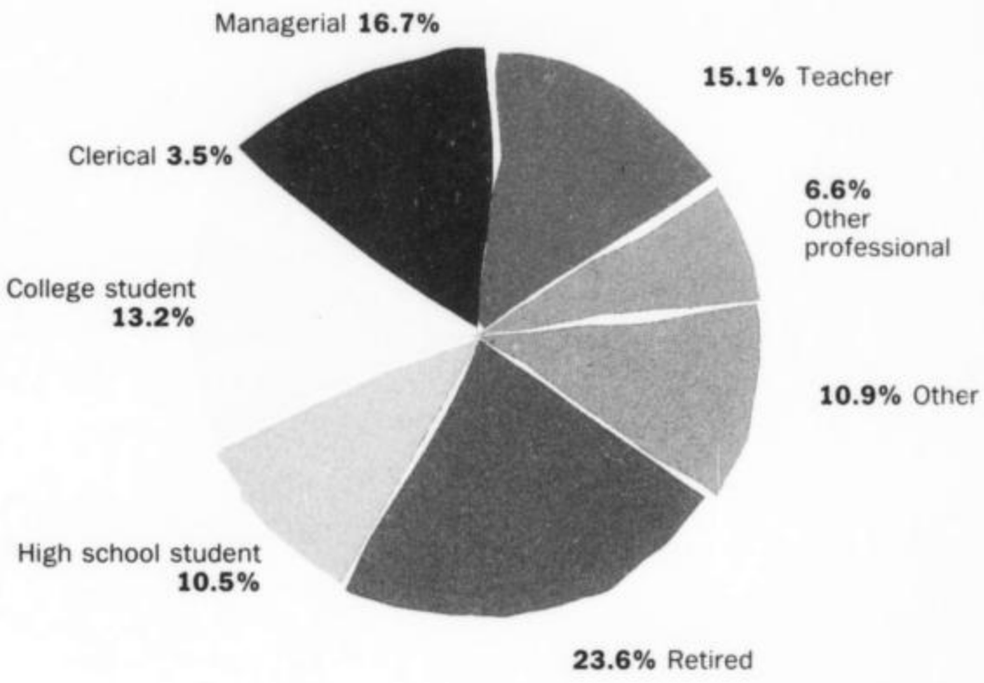
We hope you will appreciate the improvements we are planning to introduce in the coming months. Meanwhile, in response to a wish expressed by many readers who answered the questionnaire, we are publishing below the main results of the survey. They give a general profile of subscribers to the French edition and their verdict on the first twenty issues of the new formula introduced in 1989. We should be happy to receive your comments as a reader of the English edition.

How much time do you spend reading the *UNESCO Courier*?

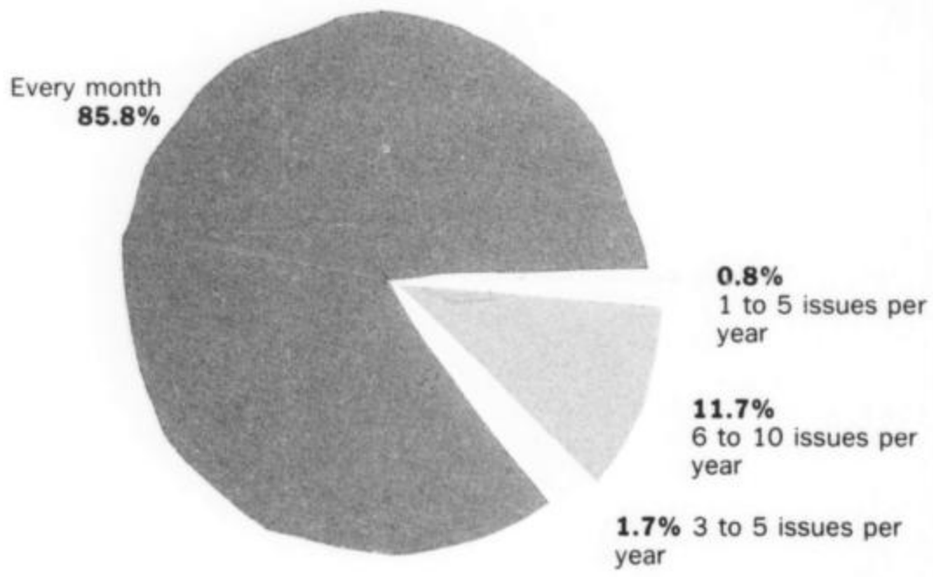


An above-average figure reflecting an interested, motivated readership.

What is your occupation?

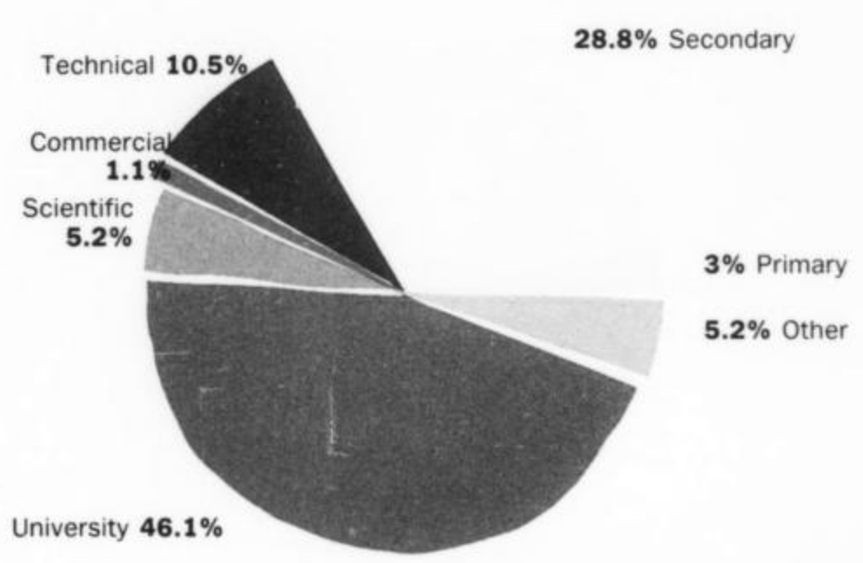


How regularly do you read the *UNESCO Courier*?

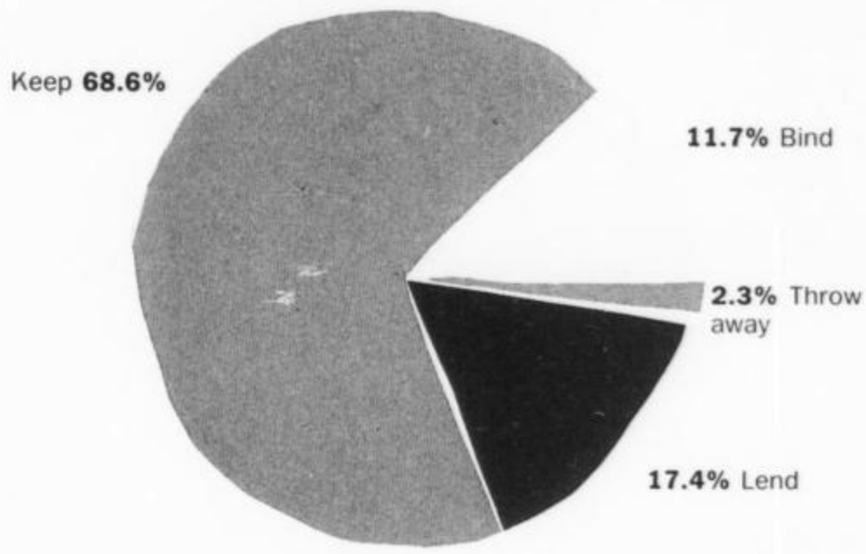


Some 85% of subscribers have a reading pattern identical to that of people who buy a periodical at the newsstand, in that they read each issue they receive.

What is your level and/or branch of education?

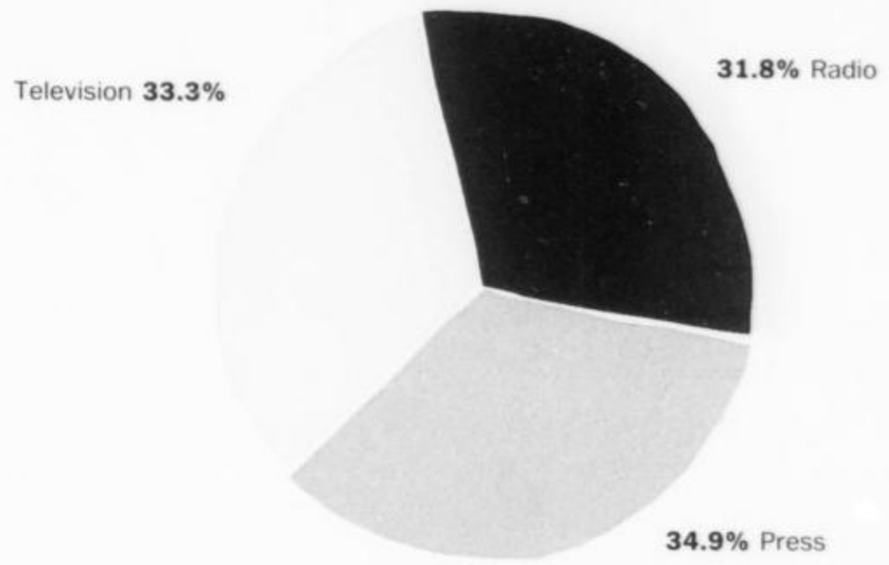


What do you do with your issues of the *UNESCO Courier* when you have read them?



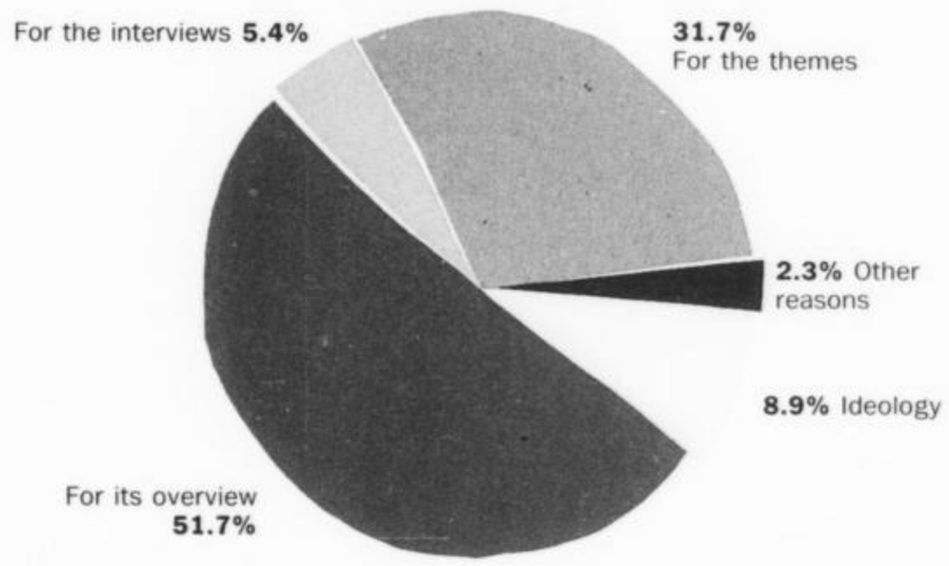
The *Courier* is kept for future reference.

What are your sources of information?



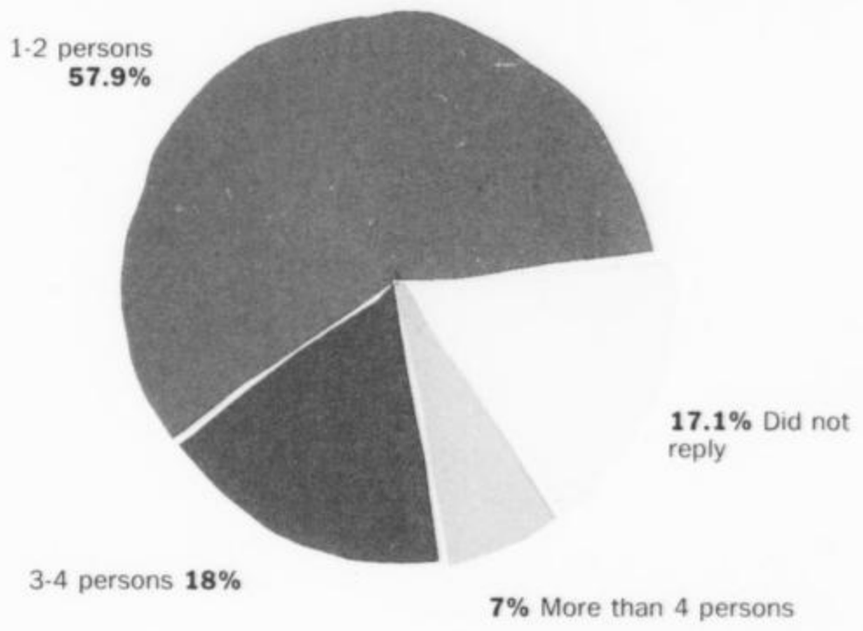
A balanced range with a slight preference for the written press.

Why do you buy the *UNESCO Courier*?

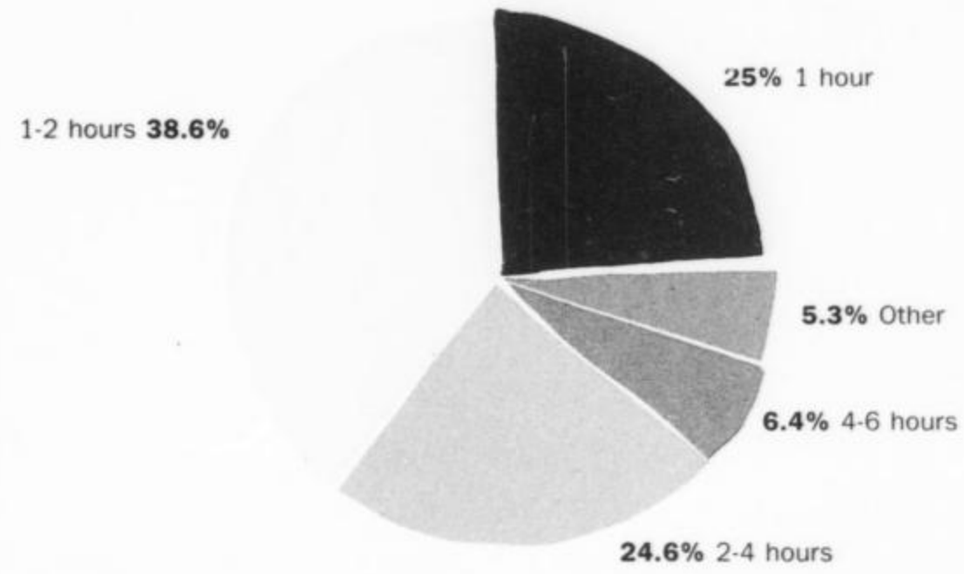


Strong approval for the *Courier*'s cross-cultural content.

Apart from yourself, how many people in your household read the *UNESCO Courier*?



How much time do you devote to cultural activities in an average day?



Readers who enrich their minds through intellectual pursuits and seek a wide range of information to develop their tastes, opinions and critical faculties.

How interesting did you find the thematic content of the first 20 issues of the new formula?

	very	fairly	slightly	not at all
1789: An idea that changed the world	43	42	9	6
The family past and present	39	41	8	12
Streetscapes	35	44	16	5
Great epics	38	44	8	10
Strangers on the screen	28	48	15	9
A mathematical mystery tour	43	33	18	6
High days and holidays	30	35	21	14
The fortunes of money	44	39	12	5
The art of hospitality	52	37	7	4
History and memory	55	31	8	6
The making of history	62	29	5	4
The birth of the universe	62	30	5	3
Winds of freedom	46	40	8	6
The challenge of illiteracy	56	32	10	2
Art Nouveau	47	34	12	2
The media. Ways to freedom	35	43	15	7
The automobile	24	42	20	14
Sacred places	64	23	7	6
The enigma of beauty	56	29	11	4
Cities under stress	55	37	-	8
	45.7%	**36.6%**	**11.1%**	**6.6%**
	82.3%		**17.7%**	

Survey carried out by *Hot Line*, Paris.

Safeguarding the splendour of the pyramids

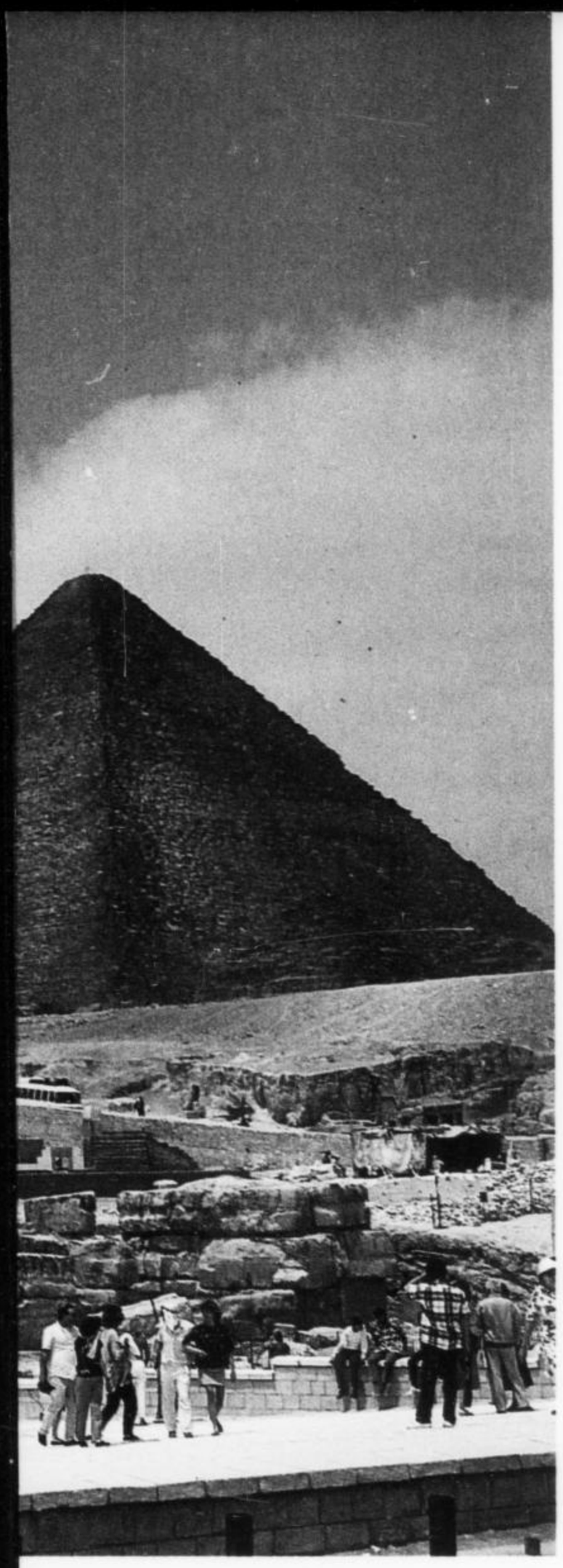
by Gérard Bolla

FEW groups of great monuments blend so well with their natural surroundings as the pyramids of Giza. At night beneath a canopy of stars, or in the blinding light of the desert in daytime, the pyramids rise, impressive and alone in a world of rock and sand. Those who built this royal necropolis long ago clearly intended it to be a haven of peace, isolation, and silence.

The tranquillity of the archaeological site is today threatened by a rash of uncontrolled building development, and the plateau is being taken over by tourist coaches and amenities. Some promoters have even envisaged making golf courses and artificial lakes for pleasure boats. In short, there is a risk that one of the wonders of the world may lose its splendour owing to the anarchic growth of tourism.

To prevent this from happening and to restore serenity to the plateau, the Egyptian Minister of Culture, Farouk Hosny, has decided to take a number of measures.

• Access to the plateau, today open to all, will



be strictly controlled, as is the case with almost all historic monuments elsewhere in the world;

• The modern buildings which have been constructed near the site over the years, contrary to the advice of architects, will be demolished. Also scheduled for demolition is the structure which houses the famous royal boat of pharaoh Khufu and which disfigures one side of the Great Pyramid near which it was excavated. The boat will of course not be removed until all the necessary technical precautions have been taken to prevent damage to this fragile masterpiece;

• The tarmac roads, whose colour clashes with that of the site, will be replaced by roads made of solidified sand;

• Motor traffic, a source of noise and pollution which damages the stone of the monuments, will be prohibited. Archaeologists and service staff will use electric vehicles;

• Unsupervised animals such as dogs and goats which harm the monuments and discourage visitors will be prohibited;

• Bridle paths will be designed to provide spectacular views for visitors on camel and horseback. They will also make it easier to keep the site free of litter;

• Also in the interests of tourists and visitors, the area set aside beneath the Sphinx for *son et lumière* shows will be extended. This area will be lowered so as to improve the view of the Sphinx and the pyramids from the eastern access road to the plateau;

• As is the case with other historic monuments, revenue from visitors will contribute to the conservation of the irreplaceable heritage left by the ancient Egyptians;

• The existing buffer zone will be defined more clearly and improved both aesthetically and functionally, so as to provide a better view of the monuments and to respect the dignity of the site. The cafeteria to the east of the pyramids will disappear.

It is clearly necessary that the plateau of Giza should be fenced off to channel the movement of visitors—at least in the part which is accessible to everyone. Inconspicuous light fencing would be quite suitable for this.

Anyone who has ever marvelled at the mysterious silhouette of the Sphinx and the majestic mass of the pyramids as they suddenly come into view from behind a sand dune will appreciate the importance of safeguarding their timeless splendour. ■

GÉRARD BOLLA, Swiss jurist and economist, is a former Assistant Director-General of UNESCO. From 1971 to 1981 he was in charge of UNESCO's programme for the conservation of the cultural heritage, and was notably responsible for archaeological safeguard and rescue operations at Philae (Egypt), Venice, Borobudur and Carthage. He has served as chairman of an international advisory committee of experts on the development project for the plateau of the pyramids.

NEW WORLD HERITAGE SITES

In December 1990, 17 sites were inscribed on UNESCO's World Heritage List, bringing the total number to 337.

The new sites are:

- **The palace and parks of Potsdam and Berlin (Germany).**
- **The Jesuit Missions of the Chiquitos (Bolivia).**
- **Mount Huangshan (China).**
- **Delos (Greece).**
- **The monasteries of Daphni, Hossios Luckas and Nea Moni of Chios (Greece).**
- **The historic centre of San Gimignano (Italy).**
- **Tsingy de Bemaraha Strict Nature Reserve (Madagascar).**
- **Te Wahipounamu (New Zealand).**
- **Tongariro National Park (New Zealand).**
- **La Amistad International Park (Panama).**
- **Rio Abiseo National Park (Peru).**
- **The Colonial City of Santo Domingo (Dominican Republic).**
- **Saint Sophia Cathedral and related monastic buildings, Kiev-Pechersk Lavra, Kiev (Ukrainian SSR).**
- **The historic centre of Leningrad and related groups of monuments (Soviet Union).**
- **Itchan Kala (Soviet Union).**
- **Khizi Pogost (Soviet Union).**
- **The Kremlin and Red Square, Moscow (Soviet Union).**

Six states—Belize, Fiji, Mongolia, Romania, Czechoslovakia and Venezuela—have recently ratified the Convention concerning the Protection of the World Cultural and Natural Heritage, bringing the total number of states parties to the Convention to 115. In 1992 UNESCO will be celebrating the 20th anniversary of the adoption of the Convention.

UNESCO IN ACTION

EUROPEAN FORUM FOR UNESCO CLUBS

A meeting of European UNESCO Clubs was held at Strasbourg (France) from 17 to 21 December 1990. The main themes discussed were the natural and cultural heritage, human rights, democracy and citizenship, cultural development, interdependence and solidarity.

UNESCO Clubs, the first of which was created in Japan in 1947, are groups of people of all ages and from a variety of professional backgrounds who support UNESCO's work. Today there are some 500 UNESCO Clubs and Associations in Europe, and 3,200 more in about 100 different countries.

For those wishing to find out more about the activities of UNESCO Clubs, a number of publications are available from: The Division of National Commissions and UNESCO Clubs/The World Federation of UNESCO Clubs and Associations, 1 rue Miollis, 75015 Paris, France.

UNESCO AND CHERNOBYL

UNESCO has launched a programme to intensify international co-operation in efforts to remedy the consequences of the disaster at the Chernobyl nuclear power station in April 1986. An agreement on this programme was signed on 9 January 1991 by the Director-General of UNESCO and the permanent delegates to UNESCO of the Soviet Union, the Byelorussian SSR and the Ukrainian SSR.

The programme consists of some 70 projects designed to assess the medical and ecological impact of the disaster, to safeguard the region's cultural heritage, to construct new settlements, and to develop public education and information. In accordance with UNESCO's mandate, the projects are primarily concerned with the human aspects of the accident. Priority is being given to the safety of the 4 million people living in the disaster area, and to that of some 600,000 members of the armed forces, Chernobyl staff and local volunteers who helped to limit the initial damage.

Projects for the 800,000 children in the area include the creation of prototype schools and of international exchange programmes.

YOUNG REPORTERS

The first international festival of video-reporting by young people will take place in Port de Bouc, France, from 20 to 23 June 1991. It is being organized by the municipality of Port de Bouc under the auspices of UNESCO.

Entrants must be between 13 and 25 years of age and their videos must be submitted by an organization (university, school, audiovisual workshop, UNESCO Club, youth club, cultural centre, works council, town or local association, etc.).

Entrants may choose from 12 themes including nature, the environment, ecology, sport, entertainment, and work yesterday and today. A jury of television and other audiovisual professionals will make a preliminary choice of videos for the festival and the final selection of prizewinners.

For further information and entry forms, write to: Festival International du Jeune Reportage, Hôtel de Ville, 13110 Port de Bouc, France. Fax: 42 06 28 92. Video-cassettes must be received by 15 May 1991 to be eligible for the competition.

UNESCO MAPS AND ATLASES

For many years UNESCO has produced important scientific maps and atlases, alone or in conjunction with other institutions.

An illustrated catalogue is available which classifies the maps and atlases under the following headings: general geological, tectonic, metamorphic, quaternary, mineral and metallogenic, hydrogeological, climatic, soil, vegetation and oceanographic, and is provided with an alphabetical index, price list, and list of national distributors of UNESCO publications.

A copy of *Scientific Maps and Atlases: UNESCO Catalogue* can be obtained by writing to the Sales Division, Unesco Press, 1 rue Miollis, 75015 Paris, France.

TOWARDS A DEMOCRATIC CULTURE

THE MONTEVIDEO DECLARATION

A conference entitled "Democratic Culture and Development: Towards the Third Millennium in Latin America" was held in Montevideo (Uruguay) from 27 to 30 November 1990. Organized under the auspices of the government of Uruguay by UNESCO and the PAX Institute, the conference was attended by leading politicians and scientists from Latin America and other world regions.

The conference drew up a Declaration which refers to UNESCO's mandate for the promotion of human rights and peace and calls on the Organization to give priority to action which would encourage a democratic society and cultural life. At the opening session, the Director-General of UNESCO, Mr. Federico Mayor, pointed out that this was the first time the Organization had taken action on an international scale to promote democracy.

The Montevideo conference will be followed up by meetings which will be held later this year in Prague (Czechoslovakia) and Gorée (Senegal). We publish below salient extracts from the Montevideo Declaration, whose title, "Democratic Culture and Governance", emphasizes its guiding principles.

PREAMBLE

In almost every region of the world...the foundations are being laid in public life for the difficult transition to political and economic structures that restore responsibility, initiative and decision-making authority to all members of society. Authoritarian or centralized forms of organization, which give a hegemonic state the exclusive right to determine political, social and economic options, are giving way to an increasingly general desire for a new legitimacy based on the popular will and on the recognition of political life as subject to the rule of law....

Democracy and sustainable development will depend in large measure on the ability of individual societies to modernize from within, especially through changes and adjustments that enhance the state's efficiency and legitimacy in the arbitration of conflicts and the administration of justice and in providing encouragement and guidance in the economic and cultural fields. It is only in this way that existing disparities can be overcome and a new national consensus promoted around the common goal of a more just and more effectively pluralist civil society....

PRINCIPLES AND RECOMMENDATIONS

The conference...unanimously reaffirms the vital importance of democracy for the future of mankind in that it is:

(a) the only political system and practice based on the sovereignty of the people, open to the active participation in public life of all sectors of society and all shades of opinion, without any discrimination;

(b) the only system and practice for public life capable of bringing about a society based on the rule of law and on the recognition of human rights and of civil and individual freedoms as the ethical basis for a civil society of free and equal individuals, and where the state is supreme defender of those rights and freedoms;

(c) the only system and practice for social life which is geared to the peaceful and concerted pursuit of social justice, equity and individual and community well being under the law....

The conference recommends in particular that UNESCO, which has a specific responsibility within the United Nations system with regard to human rights and peace, should give priority in its biennial programmes and medium-term plans to activities aimed at promoting democracy in social and cultural life. Specifically, it should, in co-operation with interested member states and with relevant public and private institutional networks:

(a) promote and organize forums for reflection and exchange of ideas among the intellectual and political communities;

(b) develop for subsequent inclusion in general human rights and peace education programmes material on democracy and democratic values;

(c) carry out comparative studies concerning existing mechanisms for (i) negotiation and peaceful settlement of conflicts of interest, (ii) interaction between civil society and the state, (iii) horizontal social participation and communication.

Ambassadors, adventurers and empires

by François-Bernard Huyghe

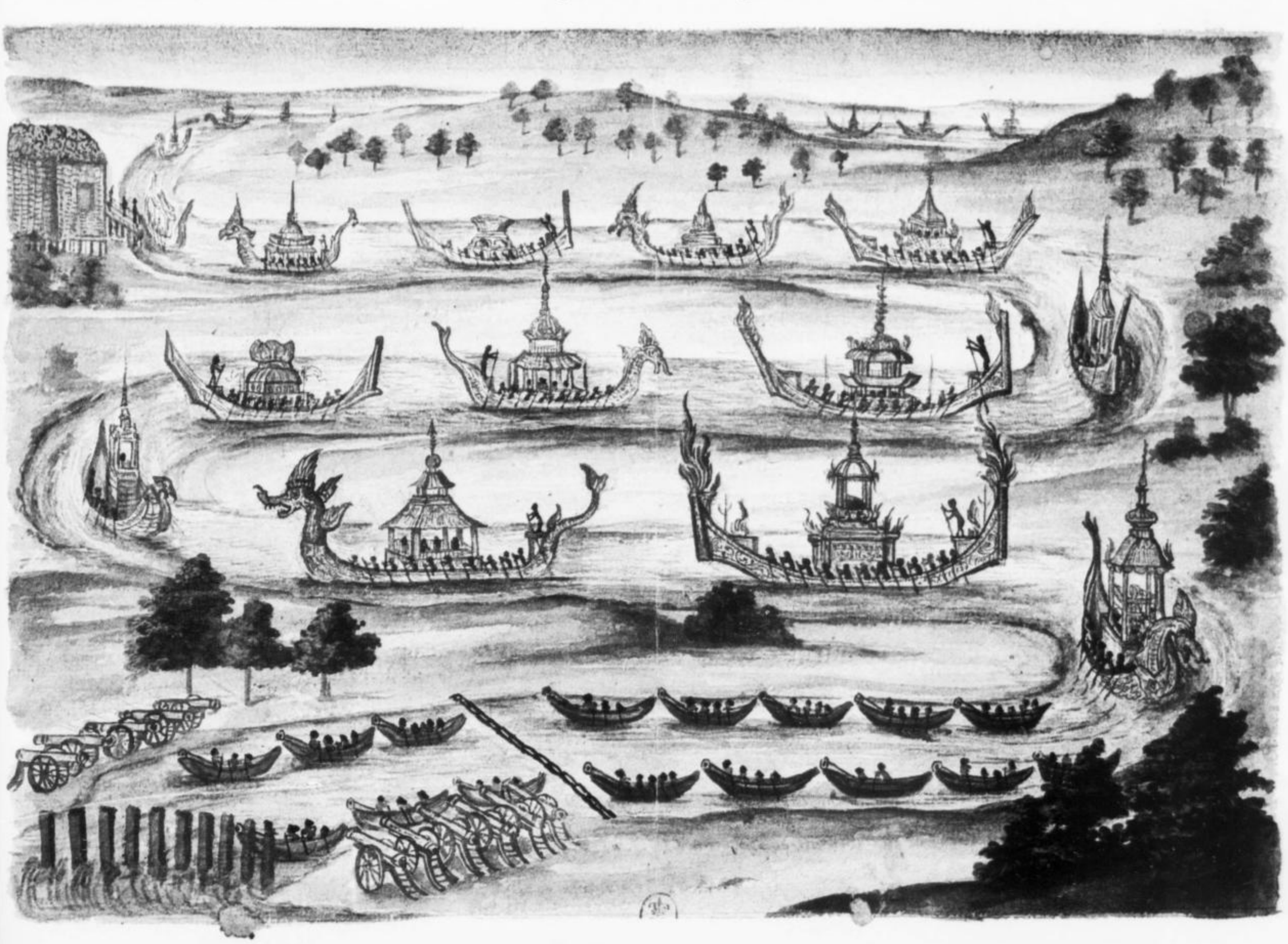
'On the thirty-first public festivities were held at Junthia or Siam to celebrate the accession of the King of Portugal to the throne. The foreign vessels fired a number of rounds of cannon and let off fireworks. The following day, the first of November, Monsieur Constance invited me to a great feast to celebrate the event. All the Europeans in the town attended and cannon were fired continually all day long. After the meal there was acting, beginning with the Chinese, then there were some Siamese whose posturing I found ridiculous and not nearly so good as our European players...' The tourist who penned these lines was a French nobleman, the Chevalier de Chaumont, who in 1685 led a mission to Siam—now Thailand—in response to a delegation sent the previous year by the Siamese king to the court of Louis XIV at Versailles.

The "Monsieur Constance" mentioned by the Chevalier de Chaumont was a remarkable person. A Greek from Cephalonia, he was also known as Constantine Hierarchy, and adopted the name of Constantine Phaulkon on his arrival in Asia. Born into a Catholic family, he was converted to Anglicanism and then reverted to Catholicism before his marriage to a Japanese Christian. He started out in life as a cabin boy on an English merchant ship, sailed to Thailand, and became interpreter to the mandarin in charge of the Treasury. Later he became Superintendent of Foreign Trade. He was ennobled and became acting minister of finance and foreign affairs in Thailand.

Plotters and adventurers at the Thai court

The English doubtless instructed Constantine to favour the English East India Company's interests at the expense of the Dutch, who had forcibly acquired a virtual monopoly of Thai trade with China. Instead, he schemed to establish French power in Thailand. There followed some rather murky episodes involving Jesuits and Roman Catholic missionaries (who were in competition with the large numbers of "Moors" who were spreading the Islamic faith). French garrisons were established at Mergui on the Indian Ocean and at Bangkok. The francophile party triumphed, but not for long. King Narai fell victim to a suspicious illness to which he eventually succumbed, and a general named Petraja took the throne. He had his rivals executed, along with Constantine and a number of missionaries, and closed the country to outside influences. Thus came to an end the reign of Pra Narai, a sovereign who loved literature so much that he spoke in verse and only took pleasure in the company of poets.

The history of the Thai court at Ayuthaya in the seventeenth century abounds in personalities like Constantine. Another prominent figure was the Japanese Yamada Nagamara, who was head of the Royal Guard and the epitome of Japanese influence in Thailand. These foreigners who intervened in Thai political life illustrate the cosmopolitan nature of the society in which they played such a prominent role. Their emergence was to some extent due to the existence of the Silk Roads. No less



The arrival of French ambassadors in Siam (now Thailand) c. 1686. Contemporary watercolour.

The observation of a solar eclipse in Siam (now Thailand), c. 1688. French contemporary engraving.

than forty foreign communities lived at Ayuthaya.

For the members of UNESCO's Maritime Silk Roads expedition, the ambiguous and picaresque careers of these men are a spectacular reminder of how the great trade routes could influence the processes of history. This idea took root when the expedition's ship, the *Fulk al-Salamah*, first arrived in Thailand at Phuket, from whence it sailed on to Malaysia and Indonesia before returning to Bangkok.

Between the Indian Ocean and the South China Sea, the barrier of Indochina

The Indochinese peninsula marks an important frontier on the Silk Roads. Early on, fear of Malaysian pirates, or perhaps a wish to make use of the monsoon winds and avoid a long detour southwards, attracted traffic between the Indian Ocean and the South China Sea. Our expedition visited the beach on the west coast of Thailand where Arab ships dropped anchor, perhaps as early as the ninth century. On the east coast, on the shores of the South China Sea, we searched for fragments of Chinese ceramics which can be picked up there as easily as seashells.

How did merchandise cross the peninsula? According to a theory put forward a few years ago, it was carried in boats which were hauled over logs by elephants. When a television company carried out an experiment to see if this was feasible so many planks (and so much porcelain) were broken that doubt was cast on the theory.

Our next port of call, Melaka, formerly Malacca, again confirmed the influence that trade has exercised on people's lives. Much has been written about the different cultures and peoples of Malaysia, but how many people know that at the beginning of the sixteenth century no less than eighty-four languages were spoken in Malacca, including three different types of Malay, each the language of a specific social class? And that the Indian, Arab, Persian and Chinese communities each had their own district and played an important part in the life of the community?

Between the foundation of the city at the end of the fourteenth century by Paramesvara, an exiled prince from Sumatra, and the Portuguese colonization of 1511, a state developed whose destiny was dominated by its maritime vocation. The Chinese Ming emperor Yonglo immediately realized the importance of this port strategically situated on the Strait of Malacca.

As early as 1403 the Chinese began to send missions to Malacca and established diplomatic relations with the city. One imperial envoy was the Muslim admiral Zheng He who led several naval expeditions which were typical examples of the Ming emperors' policy of maintaining prestige and promoting commercial expansion. Throughout our journey we came upon traces of his fleet, which was one of the largest in history both in the number and size of its ships.

The spectacular development of Malacca was a justification of Chinese diplomacy. A halfway point on the Silk Road between India and China, the city overflowed with cloves from the Moluccas, wood from Timor, Chinese and Japanese objects, goods from India, spices, perfumes, medicinal herbs, rubies from Sri Lanka, gold and silver. Merchants from every nation bartered their cargoes or waited there for a favourable wind.

These riches reached Europe via Hormuz and Basra or Suez and Cairo. Malay became the lingua franca of the region. Malacca, which lived entirely from trade, prospered and soon came to control the peninsula and eastern Sumatra. It conducted an intelligent fiscal policy which enriched the state without discouraging foreign merchants.

Islamization also brought benefits to Malacca. This was the result of a mission sent by the king of Pasai (North Sumatra) after the ground had been prepared by Muslim traders and possibly by the Sufi mystics who accompanied them. First Paramesvara was converted, then his nobles, and finally the people at large. Islam soon became the official religion, facilitating relations with the Arab and Persian merchants who dominated trade in the Indian Ocean.

The structure of the state reflected the importance of commerce. The sultan and his chief ministers (including the Shahbandar or "harbour master") were, in the words of a Malaysian specialist, "simultaneously the holders of authority and the principal merchants of Malacca". Their fortune was considerable. Every merchant whose ship anchored in Malacca knew he would have to hand over to them a proportion of his profits. Many nations and religions met in this thalassocracy in which a Portuguese chronicler of 400 years ago declared that he had seen "the greatest number of merchants and ships that can possibly be found in the whole world".

The Indonesian maritime empire

If there is one country that embodies the idea of diversity and openness to the world it is surely Indonesia, with its 13,700 islands, 250 ethnic groups and even greater number of languages. Our visit to Indonesia gave us the opportunity to attend a seminar where we learned something about the kingdom of Srivijaya, which is so little known that some people wonder whether it ever existed. And yet, between the seventh and the fourteenth century, this kingdom called by the Chinese San Fu Qi emerged in Sumatra from among the numerous ports of the Indonesian archipelago that were struggling for maritime and commercial supremacy. Both Hinduism and Buddhism flourished there, and Chinese monks visited Palembang, the capital of Srivijaya, to study sacred texts.

In the thirteenth century this kingdom probably held sway over fifteen other realms, including Sri Lanka. Its hegemony extended over a large part of Southeast Asia, from Thailand to Sumatra. This warrior state was slowly transformed into a trading kingdom and became the centre of a complex network of sea and river ports which were conduits for international and local trade and enjoyed a certain degree of autonomy.

Once again the Silk Roads had made and brought down empires. ■

FRANÇOIS-BERNARD HUYGHE, French writer and journalist, is a former member of UNESCO's Division of Cultural Heritage.

RECENT RECORDS

listening

by Isabelle Leymarie

■ JAZZ

Charlie Haden and The Liberation Music Orchestra.
Dream Keeper.
With the Oakland Youth Chorus. Arrangements by Carla Bley (conductor). Musicians include Charlie Haden (bass), Branford Marsalis (tenor sax.), Ken McIntyre (alto sax.), Earl Gardner (trumpet), Paul Motian (drums).
CD Polydor 847 876-2.

A fine orchestra, with a fresh, non-conventional sound somewhere between folk music and jazz, plays committed music mainly from South America and South Africa. "Spiritual", by Haden himself, is dedicated to Martin Luther King and other Afro-American leaders. Here Charlie Haden has assembled a line-up of musicians who do not usually play together.

Wallace Roney.
The Standard Bearer.
Wallace Roney (trumpet), Gary Thomas (tenor sax.), Mulgrew Miller (piano), Charnett Moffett (bass), Cindy Blackman (drums), Steve Berrios (percussions).
CD VG 651 600622.

The brilliant young trumpeter Wallace Roney, a disciple of the great Art Blakey, joins some of his peers to provide new interpretations of standards such as "Con Alma" and "Giant Steps". Roney's playing has a rounded, warm and powerful tone, something like that of Lee Morgan, whom he acknowledges as one of his heroes. Berrios, a former associate of Mongo Santamaría, adds some Latin spice on "Loose". Moffett, Blackman and Miller are some of the most admired sidemen in jazz today. Gary Thomas, whom I heard for the first time on this disc, will surely go far. Powerful, solid jazz.

■ CLASSICAL

Gluck.
Les pèlerins de la Mecque ou La rencontre imprévue ("The Pilgrims to Mecca or the Unexpected Encounter").
Orchestra of the Lyon Opéra, conducted by John Eliot Gardiner.
2 CDs. Erato 2292455162.

This is the first recording of a light opera which was composed when Turkish styles were at the height of fashion and was first performed in Vienna in 1764. The scene is set in Cairo, where Sultan Reiza wanders in search of his beloved, whom he believes to be dead. After many trials and tribulations, the lovers are reunited. The music is lively and elegant, the arias delightfully fresh.

Classiques des Amériques ("Classics of the Americas"). Vol. 1. Cervantes, Saumell, Gottschalk.
Georges Rabol, piano.
CD Opus 30-9001.

The Martinique-born pianist Georges Rabol gives a marvellous rendering, alternately light and sombre, of works by three 19th-century Creole composers. Cervantes and Saumell were the great Cuban masters of the danza and contradanza. Louis Moreau Gottschalk, born in New Orleans, made several visits to Cuba and Puerto Rico, bringing Caribbean rhythms back to the United States. The impact of Spanish Romanticism can be felt, but it is mingled with Afro-Caribbean influences to which the music owes its strongly syncopated quality, reminiscent of ragtime. Each piece evokes the charm and gentleness of the tropical region of its origin.

Manuel de Falla.
La obra para piano ("Piano Works").
Jean-François Heisser, pianist.
CD Erato 2292-45481-2.

This is a brilliant and inspired recording of Manuel de Falla's piano works, whose nuances are rendered by Heisser with unerring accuracy. "The Three-Cornered Hat" and the "Obras Españolas" (which include, curiously, a languid "Cubana") are charmingly played. "Pour le tombeau de Paul Dukas", a serene and meditative tribute to the great French composer, leaves an impression of classical limpidity. The spirit of Andalusia which penetrated every fibre of Falla's being lives again in "Love, the Magician". Heisser provides an intelligent introductory text. Nobody understands music better than musicians.

Sergey Prokofiev.
Two Violin-Piano Sonatas and five Violin-Piano Melodies.
Régis Pasquier (violin), Pascal Rogé (piano).
CD Adda 581195.

Too seldom heard, these sonatas and melodies are among Prokofiev's finest works. A blend of Slav passion and formal rigour, the Sonata for Violin in F Minor, Opus 80, was perhaps inspired by Handel. The first person to hear it, the Russian violinist David Oistrakh, wrote that "Such a beautiful and profound work has not appeared in the violin repertoire for decades".
Régis Pasquier is the founder of the Trio Pasquier, and Pascal Rogé an outstanding interpreter of Satie and Poulenc.

Claude Debussy.
La mer/Prélude à l'après-midi d'un faune/Nocturnes.
Orchestre de la Suisse romande, conducted by Armin Jordan.
CD Erato 2292-45605-2.

The Orchestre de la Suisse romande is one of the best in the world for late 19th- and early 20th-century music. Here it renders Debussy's passionate symphonic poems "La mer", which he began to write in Burgundy and completed in Jersey; the "Prélude à l'après-midi d'un faune", inspired by Mallarmé's eponymous poem; and "Nocturnes", which may have been inspired by another French poet, Henri de Régnier, and by the American painter Whistler. Armin Jordan conjures up all the nuances of these works which rank among Debussy's finest achievements.

Anthologie de la mélodie russe et soviétique
("Anthology of Russian and Soviet Melodies").
Elena Vassilieva (soprano), Jacques Schab (piano).
2 CDs. Le Chant du Monde LDC 278 972/73.

Vassilieva and Schab perform a selection of 19th- and 20th-century works ranging from classics by Glinka, Mussorgsky, Tchaikovsky, Stravinsky, Prokofiev and Shostakovich, to pieces by less well-known composers such as Gurilev, Dargomizhsky, Roslavetz, Firsova, Denisov and Knaifel. This remarkable anthology reveals new aspects of Russian and Soviet vocal music, sometimes close to folk traditions, as in Mussorgsky's celebrated "Enfantines", sometimes mannered and exquisite as in Glinka's "Venetian Night", but always surprising.

■ FOLK

Cuba: Les danses des dieux
("Cuba: Dances of the Gods").
CD Ocora C 559051.

The heartbeat of Africa still throbs in Cuba, which has preserved one of the most vigorous folk traditions in the Americas. Descendants of the Ararâ, who came from Dahomey, still worship deities close to those of Haitian Voodoo, which also features on this recording. During the 18th-century uprisings in Haiti and San Domingo, many planters and freed slaves took refuge in Cuba's Oriente region, where their musical traditions have survived to this day. The *santeria*, a syncretic cult of Yoruba origin, is still going strong, and *batà* drums used in *santeria* cult dances have been adopted by dance bands like Irakere, of Havana. Instruments such as the conga belong to the rich Congolese heritage, as does the dance, song and instrumental form known as *rumba brava*. The erotic *guaguancó*, in which the man pursues the woman in a ritual seduction, and the *columbia*, a country dance performed mainly by men, are two forms of the *rumba brava*.

■ POP

Yalla.
Let's Go. Hitlist Egypt.
LP Mango MLPS 1040.

The new Egyptian pop music, little known elsewhere—at least in the West—has made great strides since the time of the Egyptian singing star Um Kalsum. The classical heritage, in particular the romantic *mawal*, still survives, but disco, rap and synthesizer music is dressing up the songs in a new way. This album features *shaabi* music, vibrant songs from the Cairo streets written in reaction to the saccharine big bands of the Nasser era. Nubian music, which is more African in character, is also featured with Nubian singer Khedr's rendering of "Balsam Shafee" (Healing Balsam).

Yomo Toro.
Gracias.
CD Mango CIDM 1034 842 921-2.

Puerto Rico-born Yomo Toro is the leading exponent of the *cuatro*, a type of lute, in Latin American music. Long used exclusively in folk music, the instrument has now won its spurs in salsa. On this recording, a jovial and exuberant king of salsa brings rural love songs *(jabaro)* up to date with arrangements for violins and synthesizers. Even the most grumpy listener will find it hard to resist this good-humoured disc, ideal for dancing.

M.C. Solaar.
Bouge de là (Irie Mix).
Maxi 45. Polydor 879 205-1.

An amusing disc by a young African-born rapper who grew up in the Paris suburbs. Our hero meets a number of personalities on his adventurous journey into the city. The "Irie Mix" version of the title song is lively and rhythmic, but I prefer the warm voice of M.C. Solaar in the *a cappella* version on the other side.

LETTERS TO THE EDITOR

■ Megalithic mistake

There is an error on page 25 of the November 1990 *Courier* ("Sacred Places"). Newgrange is situated near the east coast of Ireland, not "in western Ireland."

Stella M.B. Webb
Dublin (Ireland)

Newgrange, one of the finest Megalithic tombs in Europe, is of course in County Meath. Editor

■ Reporting on the environment

I was pleased to read that you are going to publish regular reports on major environmental issues. I learned a great deal from the excellent articles "Our small blue planet" (November 1990) and "Reviewing the accounts" (January 1991), by Michel Batisse.

What with the greenhouse effect, pollution, deforestation, and so on, environmental problems have become of crucial importance today.

Pierre Samuel
Professor Emeritus
Université de Paris-Sud (France)

■ Under the microscope

I find the *UNESCO Courier* an invaluable source of information and inspiration on Third World topics. Your contributors, from differing cultural backgrounds, present views not usually covered in national publications.

I was sorry, however, to find the articles by Michel Batisse on global environmental concerns relegated to the back pages, after the record reviews and the news briefs.

While the use of colour makes your pages more attractive, colour under small type reduces legibility. Your choice of type-size could be kinder to those with poor eyesight.

John Kirby Abraham
Journalist
Radio France Internationale (Paris)

■ Demography and the environment

As a demographer, I am increasingly interested in environmental questions. Population is one of the four pillars of our "small blue planet", as Michel Batisse rightly pointed out in your November 1990 issue.

Your efforts to elucidate and reflect on major environmental problems are worth following up and expanding into major articles. Demography deserves a central place in your coverage.

Jean Marie Poursin
Paris (France)

■ Keep up the good work!

I have been a member of a contemplative order of nuns for 56 years (I am 75 years old). I lost my sight in 1964, and one of the other sisters, knowing that I like to study, arranged for me to receive the Braille edition of the *UNESCO Courier*.

Needless to say, after reading one issue, I ordered it regularly. I should like to express my gratitude to you. I have also receive' a free subscription to the ink-printed edition. Everyone to whom I have passed on my copies has read them with great pleasure.

I am still interested in everything that is beautiful and noble, in music, poetry and art, and highly appreciate your excellent magazine. I pray for your success.

Sister Emmanuelle Chanat
Communauté des Soeurs
Contemplatives du Bon Pasteur
Saint-Martin-d'Hères (France)

■ Words and pictures

Your magazine is a quality publication which also establishes human contact with its readers. But I would like to see more solid and detailed articles, with less prominence given to the titles and, above all, fewer full-page photographs. What interests me in interviews is what people have to say—their personality, not their portrait.

Georges Tardy
"Le Moulin"
76730 Rainfreville (France)

■ An avid reader

A student, I read widely for pleasure and especially make it my business to go carefully through the press. I can assure you that the *UNESCO Courier* is unique. It is the only reasonably low-priced magazine to publish so many concise, informative features presented in such a polished and rigorous way (colour, layout, attention to detail).

Last but certainly not least, it is the only magazine to provide a truly international perspective on topical issues such as war and peace, industrial development and the environment, democracy and oppression.

Hervé Pesson
Les Trois Fontaines
Fussy (France)

BACK NUMBERS

■ A subscriber to the French edition of the *UNESCO Courier* since 1960, I am looking for a complete set of back numbers up to December 1959, including the *Unesco Monitor* which was published in August 1947 and was followed by the first edition of the *Courier* proper in February 1948.

G. Tricoche
4, rue M. Lambert
16600 Ruelle (France)

■ I have every copy of the French edition since 1965, when I took out a subscription. As I am over 80 years of age and nobody I know can take them, I'm looking for a possible purchaser.

Marcel Cancre
Grands Champs
Noyant-d'Allier
03210 Souvigny (France)

■ A long-time subscriber, I still have around a hundred copies of the French edition, dating from 1959 to 1979. I would be happy to part with them to someone wishing to complete their collection.

Guy Colard
10 bis rue des Batignolles
75017 Paris (France)

■ I want to dispose of my collection (French edition), which runs from April 1975 to December 1990, and will consider any offers from other readers.

Nicole Riboulot
53 avenue de Paris
51000 Chalons-sur-Marne (France)

■ I wish to sell my collection of the French edition, complete for the following years: 1978, 79, 82, 83, 84, 86, 87, 88, 89 and 90.

Mme Gunck
109 rue de Sèvres
75006 Paris (France)

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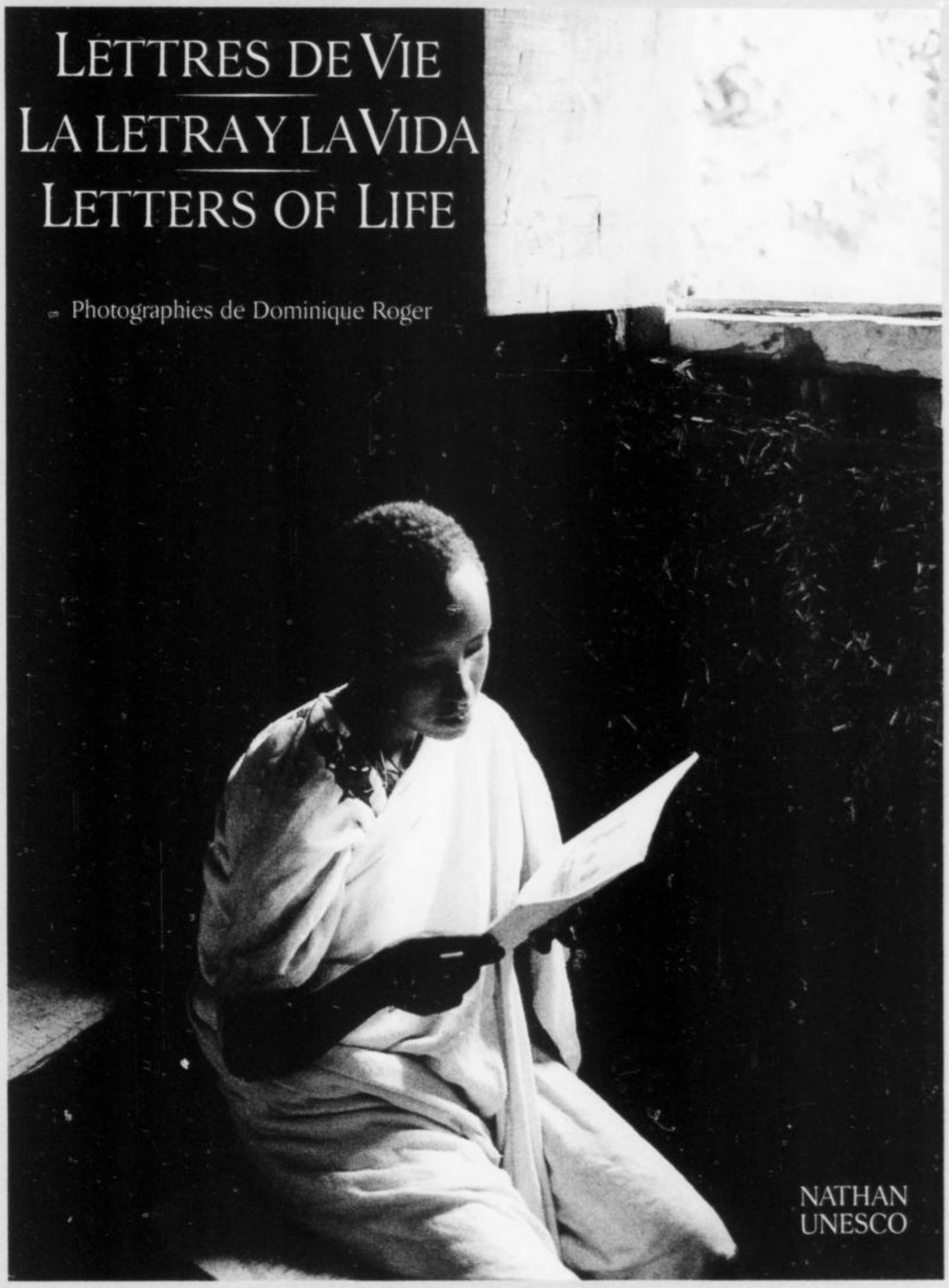
LETTERS OF LIFE

A MAJOR PUBLICATION ON WORLD LITERACY



UNESCO and Editions Nathan of Paris have co-published an album of photographs and texts, entitled **LETTERS OF LIFE**, to mark the close of International Literacy Year (1990) and to illustrate the fight against illiteracy in 22 countries.

Fifty-two full-page photographs by Dominique Roger present different aspects of literacy work. The accompanying texts have been contributed by 52 distinguished people from all walks of life. The book is a "living alphabet" of their messages, from "A" (Corazón Aquino and Oscar Arias) to "Z" (Wou-Ki Zao and Zouc), all of which emphasize the importance of literacy to development.

LETTERS OF LIFE was published on 13 February 1991 at an open day at UNESCO Headquarters in Paris. On the same day, UNESCO launched a vast campaign in France to mobilize children aged between 6 and 15 to buy pencils and exercise books for pupils in developing countries who lack these basic learning materials. It is hoped that this campaign, supported in France by the television channel Antenne 2 and the Ministry of Education, Youth and Sport, will be extended to other countries.

Part of the proceeds from sales of the book will go to the UNESCO Special Account for World Literacy.

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